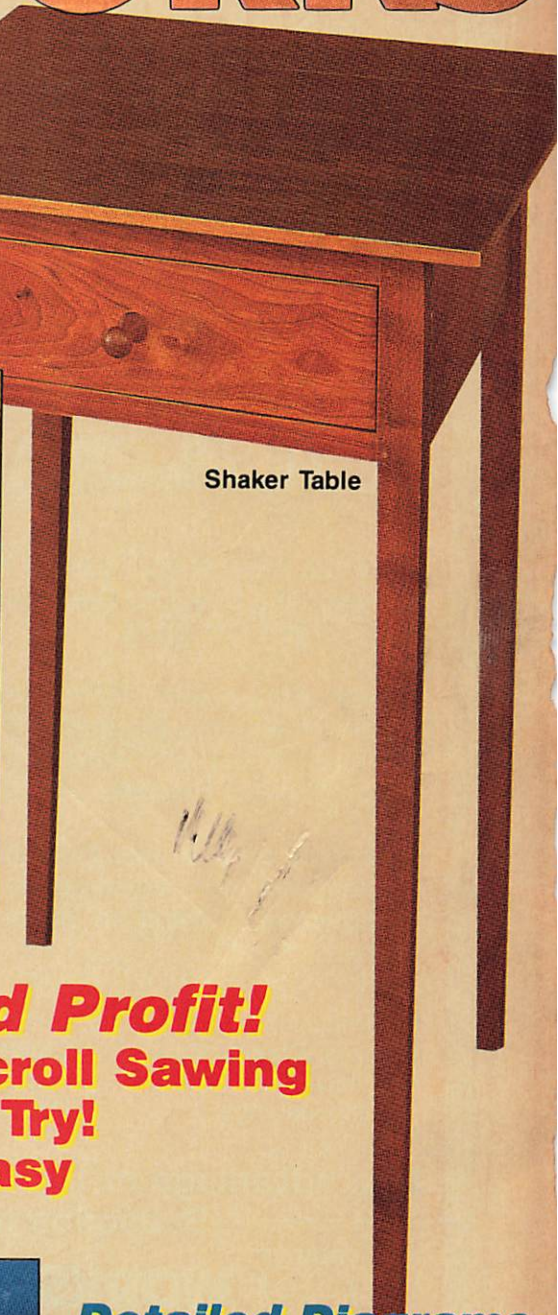
PREMIERE ISSUE!

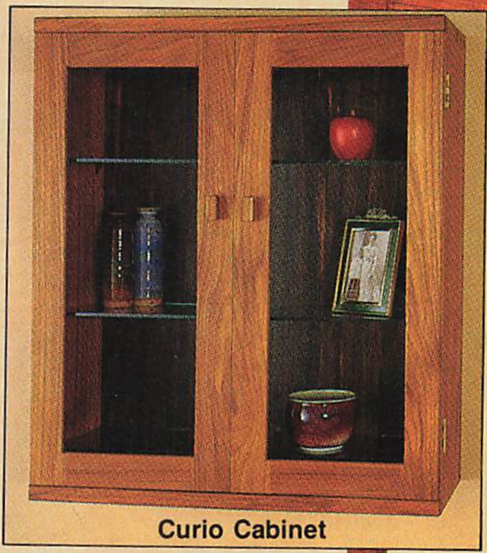
CREATIVE WOODWORKS & CRAFTS

25 Wood Projects With Complete Plans!

Weekend Wonders!

- Beautiful Band Saw Boxes
- Child's Dream Castle
- Custom Curio Cabinet
- Shaker Table


Shaker Table


Curio Cabinet

A Turn For The Better!

- Exclusive Woodturning Tips
- Expert Advice For All Skill Levels

Band Saw Box

For Fun And Profit!

- Successful Scroll Sawing On Your First Try!
- Inlay Made Easy

Fantasy Castle

Plus!

- Tool Tryouts
- New Product Reports
- Mastering Techniques

Detailed Diagrams
Precise Plans
Full-Color Photos

$3.50 US $4.50 CANADA
DISPLAY THRU MAY 2, 1989

01

TRIAL SUBSCRIPTION!

MEET THE CHALLENGING *NEW* HOBBY MAGAZINE...

CREATIVE WOODWORKS & CRAFTS

Make the most of your leisure time! With its solid array of woodworking designs, ***Creative Woodworks & Crafts*** offers hours of fun and profit.

- Clear, Step-by-Step Instructions
- Self-Explanatory Diagrams, Charts and Photos
- Professional Tips & How To's
- New Product Reviews

From projects that take a few hours, to those that offer the challenge of more artistic endeavor, you'll find ***Creative Woodworks & Crafts*** an unlimited source of ideas and patterns.

- Furniture
- Boxes, Chests
- Collectables, Gifts
- Wall Hangings
- Decorative Accessories
- Children's Furnishings
- Cabinets, Shelves
- Utensils, Bowls

PREMIERE ISSUE!

CREATIVE WOODWORKS & CRAFTS

25 Wood Projects With Complete Plans!

Weekend Wonders!
- Beautiful Band Saw Boxes
- Child's Dream Castle
- Custom Curio Cabinet
- Shaker Table

A Turn For The Better!
- Exclusive Woodturning Tips
- Expert Advice For All Skill Levels

For Fun And Profit!
- Successful Scroll Sawing On Your First Try!
- Inlay Made Easy

Detailed Diagrams
Precise Plans
Full-Color Photos

FREE! PLANS

Take advantage of this very special offer.

Subscribe today!

CREATIVE WOODWORKS & CRAFTS

☐ Please send me ***Creative Woodworks*** at this Special Offer!, 6 issues @ $15.75

☐ Please bill me. ☐ Payment enclosed.

SEND NO MONEY NOW!

Name ____________________
Address ____________________
City ____________ State ________ Zip ________

Send check or money order to: ***Creative Woodworks & Crafts,*** P.O. Box 518, Mt. Morris, IL 61054. Orders outside U.S. add $6.00. Please allow 6-10 weeks for delivery.

AWW903

SPECIAL INTRODUCTORY OFFER!

SAVE 25%

CREATIVE WOODWORKS & CRAFTS

PROJECTS

Page 21

HOME FUNSHINGS Page

1 Shaker Side Stand 6
Recapture Shaker-inspired design in your home furnishing woodwork.

2 Hall Mirror Frame 9
A graceful, sweeping curve makes this wood mirror frame a reflection of taste and talent.

3 Tabletop Trivets 12
It's no trouble to make these handy hot plates!

4 Create A Curio Cabinet 14
This teakwood wonder is an ideal display of your woodworking skill.

5 Library Step Stool 18
Step up to high style with this 3-tier stool featuring a dovetail design.

WEEKEND WOODWORKS Page

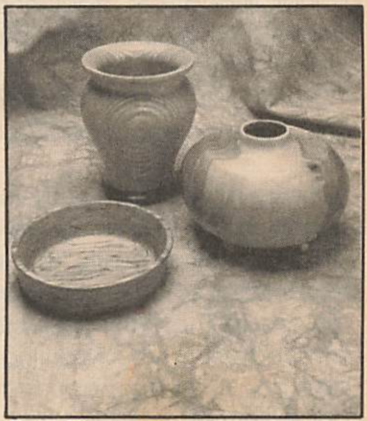
6 Folding Tray Table 21
A beautiful server on a sturdy stand that tucks away whenever you want.

7 Bentwood Mirror Frame 24
Learn a basic bentwood technique and create an original wall hanging.

SKILL-BUILDING PROJECTS Page

8 A Turn For The Better 27
Easy-to-make decorative projects that help you hone your woodturning skills.

9 A Marquetry Mural 28
Veneer pieces make fascinating patterns for one-of-a-kind wall hangings.


Page 27

DECORATIVE ACCENTS Page

10 Flying Geese 30
Canada geese in flight are captured in this distinctive woodcut wall hanging.

11 Folding Basket 32
Show off the natural flexibility of wood by giving a flat piece three-dimensional form.

12 Absolutely *Marbleous* Boxes 39
Swirling lines of attractive elm make these boxes marble-like beauties.

13 Box With Goose Inlay 45
Make this goose in any style on a large or small box with optional handmade hinges.

14 Jewelry Box With Ivory Inlay 47
Construct an heirloom piece with the look of antique ivory.

Page 55

TERRIFIC TOYS Page

15 Create A Fantasy Castle 49
Your kids will be enthralled with this fantastic toy.

16 Horse-In-A-Hoop 55
Wood-craft a charming toy for your children.

DEPARTMENTS

SHORT CUTS 5
BONUS PROJECT 58
MASTERING TECHNIQUES 60
TOOL TRYOUT 64
WOODWORKER PROFILE 66
NEW PRODUCT REPORT 67
THE BOOK CASE 68
SOURCE OF SUPPLY 70

Editorial

A Mark In The Grain

A work handmade is a work well made.

Every effort we make is rewarded if it helps shape an ideal. Step by step we build on ideas we have developed through our exposure to fellow woodworkers, how-to books and tool demonstrations, as well as our trial-and-error methods. In woodworking, there is always a mark of ourselves found in the grain–however experimental, adapted, or original our woodwork may be. We work with pride knowing that each newly created piece will reflect our commitment to a work well made.

In our premiere issue of *Creative Woodworks*, you'll meet designers who share your interest in quality woodworking. Thomas Moser's Shaker table project recaptures traditional craftsmanship. A custom curio cabinet designed by Bill Stankus shows you the finer elements of contemporary cabinetmaking.

You'll find artistic flair in projects like Norris White's beautifully turned bowls, Tom Crabb's elegant bentwood mirror frame, and Bob Muller's marquetry mural.

Quality also extends to the kinds of toys we make for kids. Sharon Pierce's sprightly horse-in-a-hoop project makes a delightful rolling toy for tots, an inspiring "fantasy castle" is a child's dream come true, and Deborah Upshaw's scroll saw puzzles are fun for everyone.

To ensure that your projects are well made, you'll find our regular columns featuring woodworking tips, tool tryouts, new product reports, and "best book" recommendations will keep you well-informed and add to your expertise.

And now if you'll take a moment to help *Creative Woodworks* serve your interests in upcoming issues, would you please check the box(es) below noting the projects you would most like to see:

☐ Furniture making
☐ Scroll sawing
☐ Toy making
☐ Wood finishing
☐ Cabinetry
☐ Router projects
☐ Woodturning
☐ Inlay
☐ Marquetry
☐ Woodcarving
☐ Wood decorating
☐ Other__________

Tear out or photocopy this page and send your selection(s) to: *Creative Woodworks*, CN 1003, 70 Sparta Avenue, Sparta, NJ 07871.

If you'd like to contribute your own designs, just send some color snapshots of your original woodworks to the above address. We'll be in touch. We're always eager to see your well-made woodworks.

Matthew T. Jones

Matthew T. Jones
Editor

CREATIVE
WOODWORKS
& CRAFTS

PUBLISHER	Jerry Cohen
EDITORIAL DIRECTOR	Camille Pomaco
EDITOR	Matthew T. Jones
EDITORIAL ASSISTANT	Jennifer Holan
ART DIRECTOR	William Miller
ART STAFF	Elise M. Sokol Mark Kosa
TYPOGRAPHY	Diane E. Schultes, Mgr. Lois T. Blaine
PHOTOGRAPHY	O'Brien & Mayor Photography

CIRCULATION MGR.	Marie-Claire Macdonald
PUBLIC RELATIONS	Madeline S. Cohen
READER SERVICE	Norma Kymer
ADVERTISING DIRECTOR	Barbara Sliker (201) 729-4477

PRESIDENT	Jerry Cohen
EXECUTIVE V.P.	Eric S. Litt
TREASURER	George Mavety
SECRETARY	Irving Spielberg

CREATIVE WOODWORKS & CRAFTS® • VOL. 1, NO. 1

CREATIVE WOODWORKS & CRAFTS® © MSC PUBLISHING, INC. 1988. ALL RIGHTS RESERVED ON ENTIRE CONTENTS.

Creative Woodworks & Crafts® is published bimonthly by MSC Publishing, Inc., 70 Sparta Ave., CN 1003, Sparta, NJ 07871, USA. All rights reserved on entire contents of magazine. We are not responsible for loss of unsolicited material. We reserve the right to edit and publish correspondence unless specific commentary and/or name and address are requested to be withheld. Reproduction of editorial or advertising contents in any way whatsoever without the written permission of the Publisher is strictly prohibited. The instructions in this magazine are published in good faith and have been checked for accuracy; however, no warranty, either expressed or implied, is made nor are successful results guaranteed. **Postmaster**: Please send address changes to P.O. Box 518, Mt. Morris, IL 61054. Subscription Rate $16.49/6 issues. *Creative Woodworks & Crafts* is pleased to announce its "Retail Display Allowance Plan," available to retailers interested in earning a display allowance on *Creative Woodworks & Crafts*®. To obtain details and a formal contract, please write our distributor for the United States and Canada: **Kable News Company, Inc.**, 777 Third Avenue, New York, NY 10017.

Printed by Quad Graphics, Inc.
Published by MSC PUBLISHING, INC.

NATIONAL ADVERTISING SALES:
Robert Bernbach Advertising Representatives, Inc.
677 Commerce Street
Thornwood, NY 10594
(914) 769-0051

RETAILERS
To carry *Creative Woodworks & Crafts*® in your store, please write:
Jackie Connors, DMI
P.O. Box 604, Bellmawr, NJ 08031
(609) 931-6930

FOR SUBSCRIPTION INFORMATION, WRITE TO:
Creative Woodworks & Crafts®
P.O. Box 518
Mt. Morris, IL 61054
Subscription Rate: $16.49/6 Issues

Short Cuts

Our forum of readers sharing their short-cuts, suggestions, and inspirations

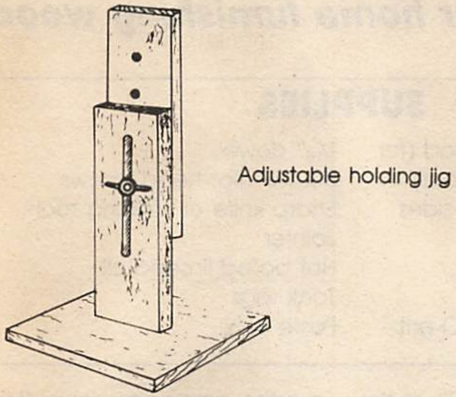
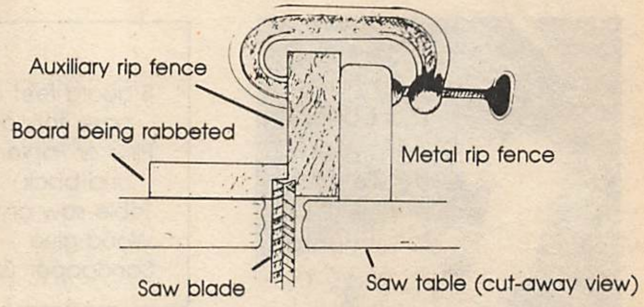


Fig. 1 *Holding Device*



Auxiliary Rip Fence Fig. 2

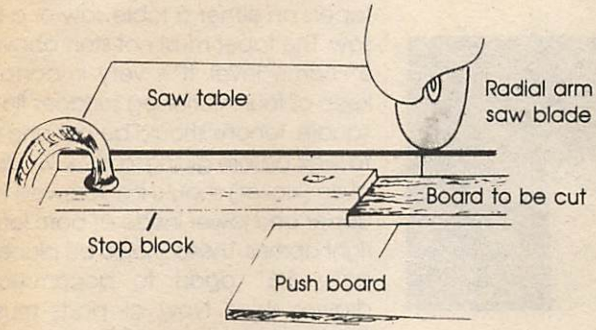
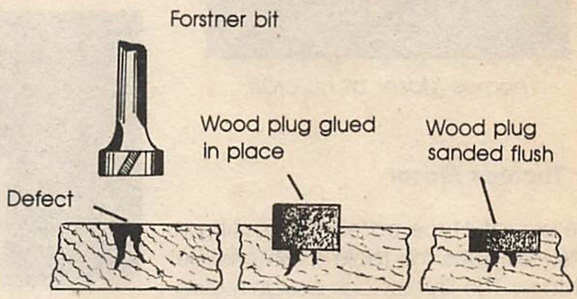


Fig. 3 *Cutting Small Blocks*



Repairing Defects Fig. 4

Holding device is an extra hand

Sometimes you need help to hold one end of a board up in position while the other end is fastened. A simple holding device can be made to serve this purpose and is especially useful when several of the same projects are being made. Fasten an upright of appropriate height to a baseboard. A more permanent fixture can be made using two overlapping boards for the upright. Holes or slits are made in one or both boards to allow adjustments of variable heights (**fig. 1**).

Auxiliary rip fence

Ripping or dadoing on a table saw sometimes means your cutting blade is so close to the metal rip fence that it endangers the equipment and becomes a hazzard to you. To eliminate this problem, attach a board fence along the metal rip fence on the side next to the cutting blade (**fig. 2**). Some rip fences have holes through the side for this purpose. Small C clamps can also be used.

Cutting small blocks on a radial arm saw

Using a stop block to cut duplicate small blocks on a radial arm saw can be frustrating. After the cut is made, the saw, on its return to the starting position, often kicks the small block out, damaging or loosening the block. To prevent the kick back, hold the small block and the rest of the board being sawed with a wide push board (**fig. 3**). The push board should be wide enough so that the cut is made only part of the way through the board as the small block is cut off. The push board should also be long enough to push against without getting your hand near the path of the saw. The length will enable you to hold both the small block and the board being cut at the same time.

Repairing small defects in wood

Small knots, nail holes, or other imperfections in wood often render an otherwise beautiful piece of wood useless. This is especially true with expensive hardwoods such as walnut, cherry, and mahogany, among others. These small defects can be repaired rather easily and with satisfaction by boring over the defect with a forstner bit then filling the bored hole with a plug cut from the same wood (**fig. 4**). When gluing the plug in place, turn the grain to match that of the wood being repaired. Use a plug that is longer than the hole is deep; after the glue dries, sand the plug flush.–*Contributed by Lavon B. Smith of Fayetteville, AR*

Shaker Side Stand

Recapture Shaker-inspired design in your home furnishing woodwork.

Thomas Moser at his craft.

by Thomas Moser

The graceful tapered leg terminating in a ⅝" tip gives this table a remarkable lightness. The Shaker-look design makes an ideal hall table, reading table, or bedside nightstand. The project offers a good exercise in the use of mortise and tenon as well as drawer construction.

SUPPLIES

- 8 board feet of cherry wood (for base, top, and drawer front)
- Pine or Poplar (for drawer sides and back)
- Table saw or band saw
- Wood glue
- Sandpaper: 320- and 400-grit
- 3/16" dowels
- 8 x 1¼" flat-head screws
- Sharp knife or scribing tool
- Jointer
- Hot boiled linseed oil
- Tack rags
- Paste wax

INSTRUCTIONS

Finished size is approximately 27½" H x 18" W.

The base

Since the side stand is to be oiled and waxed without staining, it is necessary to pick lumber for color and grain matching. The legs should be taken from a single piece of wood if possible (either a 3" x 3" square 27" long, which is then quartered, or a 1⅛" square 108" long, cut into four lengths). Six mortises are cut ¼" wide, ¾" deep and 4" long into the legs. On the inside surface of each front leg two smaller mortises are cut for the drawer rails. When cutting these mortises allow for four shoulders on each tenon and leave between ¾" and 1" at the top of the leg for strength. (Note: the front upper rail is a French dovetail or slot mortise and goes down the leg ¾".) Next, cut aprons to width and length using ¾" material. After cutting and "dry" fitting all mortises, cut the long inside leg tapers on either a table saw or a band saw. The taper must not start above the 5" frame level. It is very important to keep all four interior leg surfaces flat and square. Tenons should be cut and fitted to legs; before gluing, a ¾" x ¾" drawer glide (kicker) should be screwed to the upper and lower inside of both left and right aprons. These should be placed exactly 3½" apart to accommodate drawer sides. Now, all parts must be finish-sanded to 320 grit before assembly. After gluing, use 3/16" dowels to pin tenons. These can be made from standard dowel stock.

Fig. 1

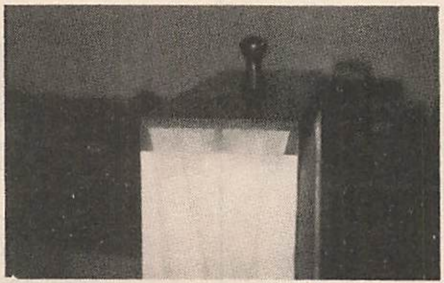


Fig. 2

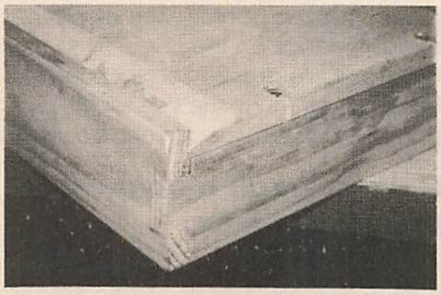
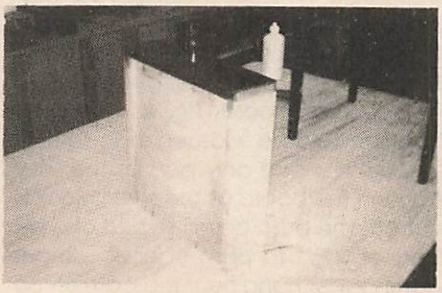


Fig. 3

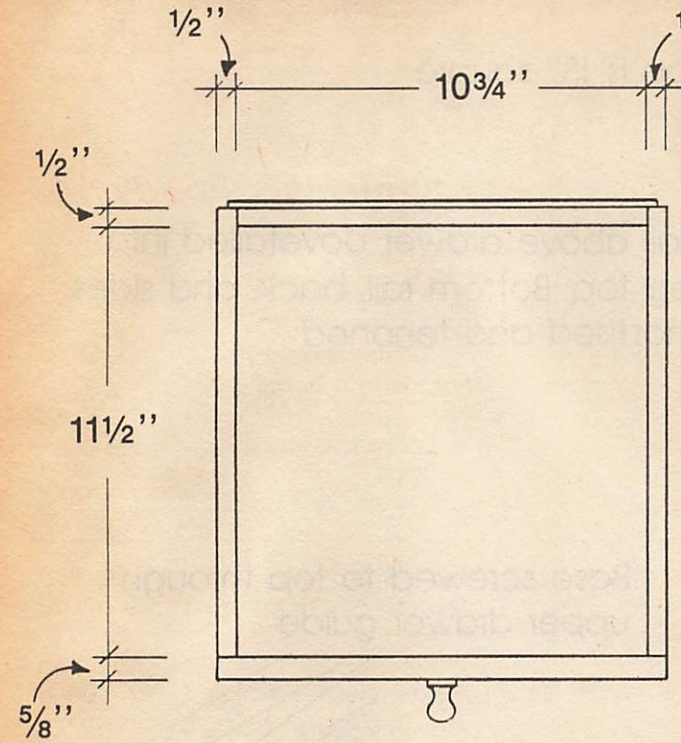


The drawer (see figs. 1-3)

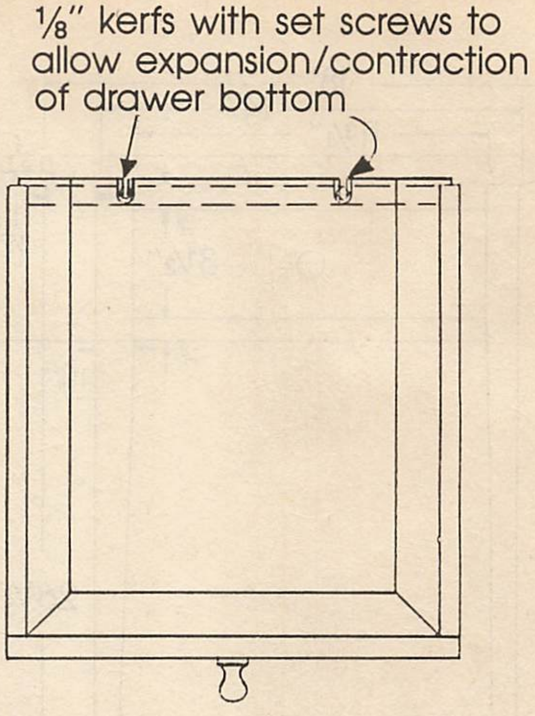
The drawer front should be made from the same board that was the source for the other three apron members. Drawer sides and back can be of secondary wood such as pine or poplar. Dovetails are cut into the sides at 15 degrees. These are then transferred to the drawer back and front with a sharp knife or scribing tool. Before cutting dovetails, a dado for the drawer bottom should be cut into sides and lower inside of the drawer front. Using a table saw or jointer, cut a bevel on three sides of the drawer bottom. The back of the drawer bottom is screwed to the drawer back in one or two pre-cut slots, which will allow expansion/contraction in the drawer bottom. The drawer bottom should extend at the back about ½". The back of the drawer bottom will

Continued on page 8

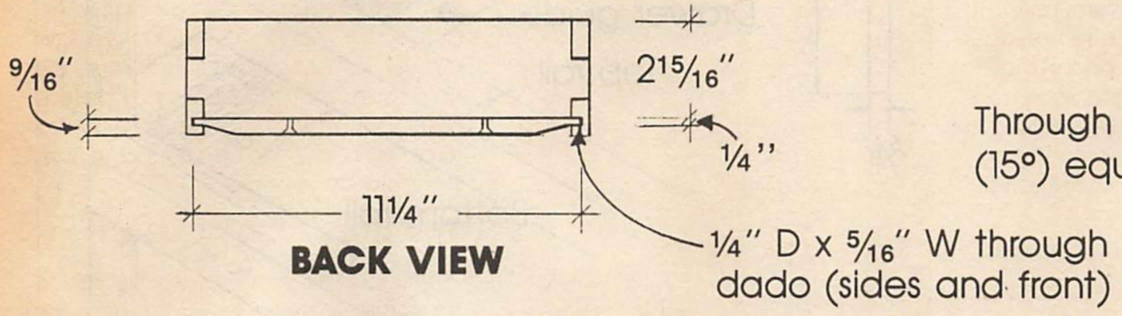
SHAKER SIDE STAND PLANS



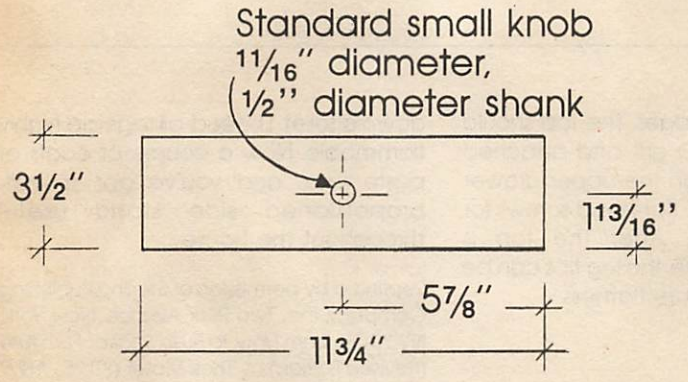
TOP VIEW


1/8" kerfs with set screws to allow expansion/contraction of drawer bottom

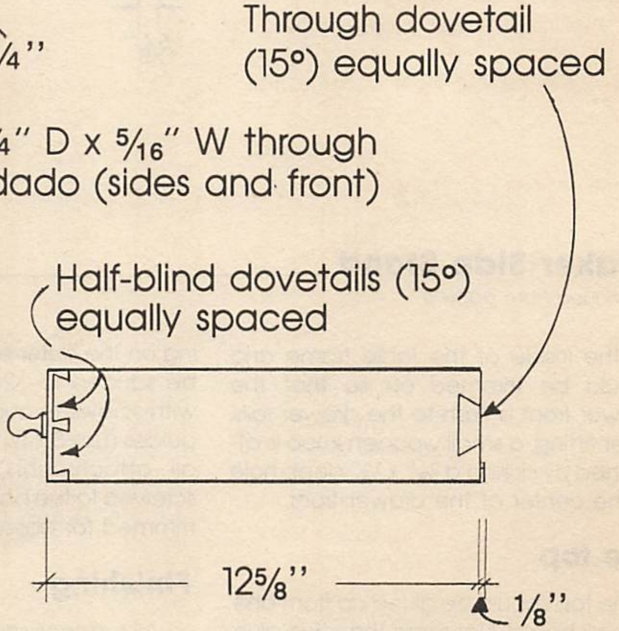
BOTTOM VIEW



BACK VIEW

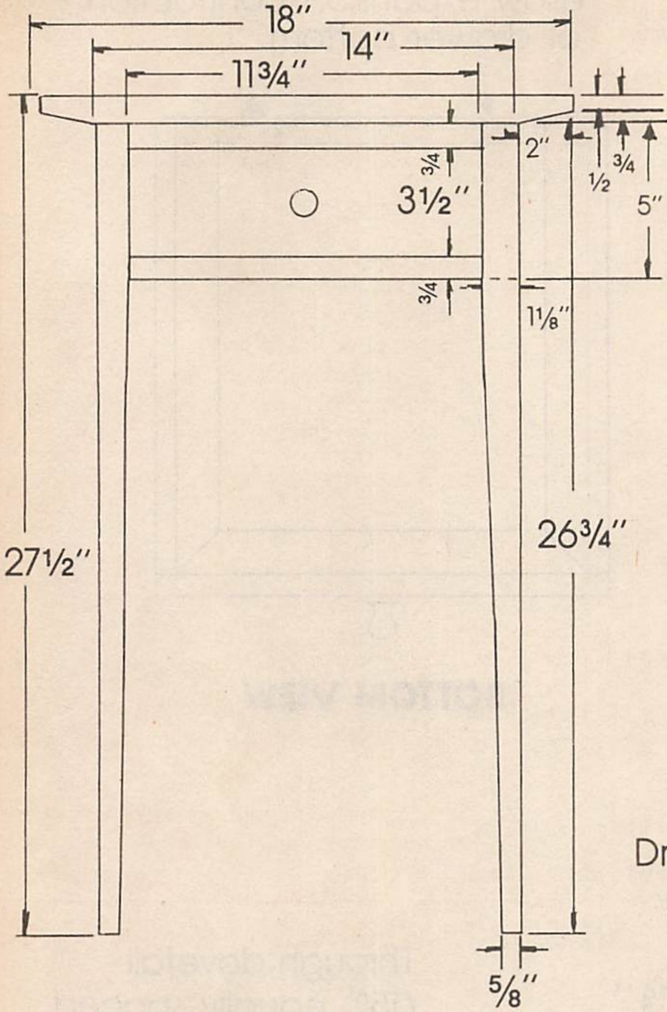


FRONT VIEW


Through dovetail (15°) equally spaced
Half-blind dovetails (15°) equally spaced
12 5/8"
1/8"

SIDE VIEW

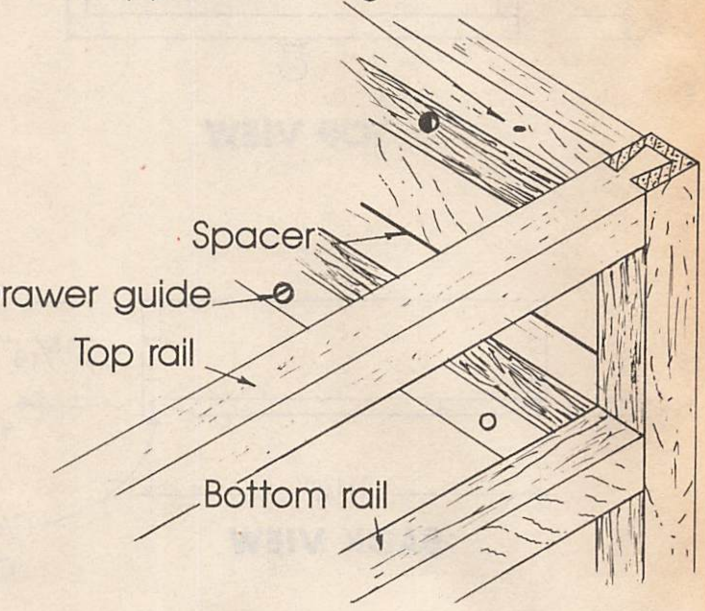
Shaker Side Stand Plans



Top is 18" square

Rail above drawer dovetailed into leg top; Bottom rail, back, and sides mortised and tenoned

Base screwed to top through upper drawer guide



Shaker Side Stand

Continued from page 6

hit the inside of the table frame and should be trimmed off so that the drawer front is flush to the drawer rails. After fitting, a small wooden knob is attached by drilling a ⅜" x ½" deep hole in the center of the drawer front.

The top

The top should be glued up from one 1"-thick board. Not more than two glue lines should be present. Dress the top to ¾" and cut a bevel about 1¾" deep on the underside of the top. This should be done in such a way that ½" is remaining on the outer edges. The top should be sanded to 320 grit and attached with screws through the upper drawer guides (use 8 x 1¼" flat-head screws for all attachments). After the top is screwed to the base, the leg tips can be trimmed for absolute flatness.

Finishing

All surfaces should be hand sanded to 400 grit and then given two coats of hot boiled linseed oil. Make sure all residual oil is wiped completely after each oiling. Burn all rags or flush them down a toilet. Linseed-oil rags are highly flammable. Now a couple of coats of paste wax, and you've got a well-proportioned side stand useful throughout the house.

Reprinted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *How To Build Shaker Furniture* (Revised Edition) by Thos. Moser ($11.95). ©1977 by Thomas Moser. For more information about fine quality woodworking books and a color furniture catalog, please contact the Sterling Publishing Company address and the Thos. Moser Cabinetmakers address in our Source of Supply list on page 70.

Hall Mirror Frame

A graceful, sweeping curve makes this wood mirror frame a reflection of taste and talent.

by Bill Stankus

A simply stated curve adds dimension and appeal to this weekend woodworking project for your home furnishing. The walnut and contrasting maple trim splines are a good-looking combination, and the basic technique makes the construction a breeze!

SUPPLIES

- Table saw
- Miter square
- Sander
- Rasp
- Router (with ¾" bit)
- Drill
- Brad setter (clamping type)
- Wood glue
- Walnut
- Maple
- Deft clear wood finish
- Mirror glass (and backing)
- Clamps
- Dowels (optional)

INSTRUCTIONS

Finished size : see plans.

Note: Select a quality hardwood, such as walnut.

Cut out the frame pieces

Cut frame pieces A, B, and C to size and miter corners. In addition to gluing in double splines at each corner, you may wish to secure the miters with a mortise and tenon or two dowels at each corner (**fig. 1**). Cut miter on left edge of piece D (board is still 6" wide). Carefully lay out pieces A, B, and C on a flat surface, so that miters are flush and square. Slide piece D in against left corner--shortest side piece (**fig. 2**). Place scrap pieces the same thickness as frame under piece B; readjust the frame for squareness. The long frame side (B) will now overlap the top frame piece (D). Carefully slide a miter square in against the miter of piece B; with a sharp pencil, lay out the location of the miter on piece D. Cut miter and lay out the full frame; check for square corners and flush miters (**fig. 3**). Note that the top piece is still wider than the other three sides.

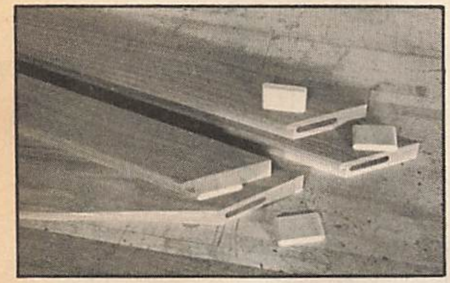


Fig. 1

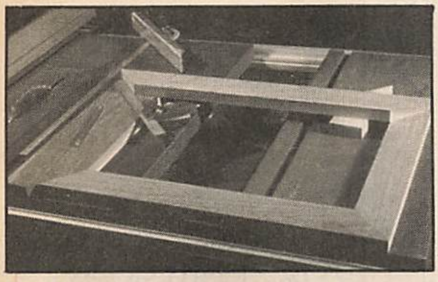


Fig. 2

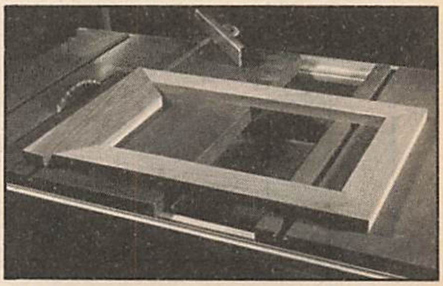


Fig. 3

Design the curve

Draw desired curve on the inner edge of piece D, matching the inner miter corners. Cut curve and sand smooth.

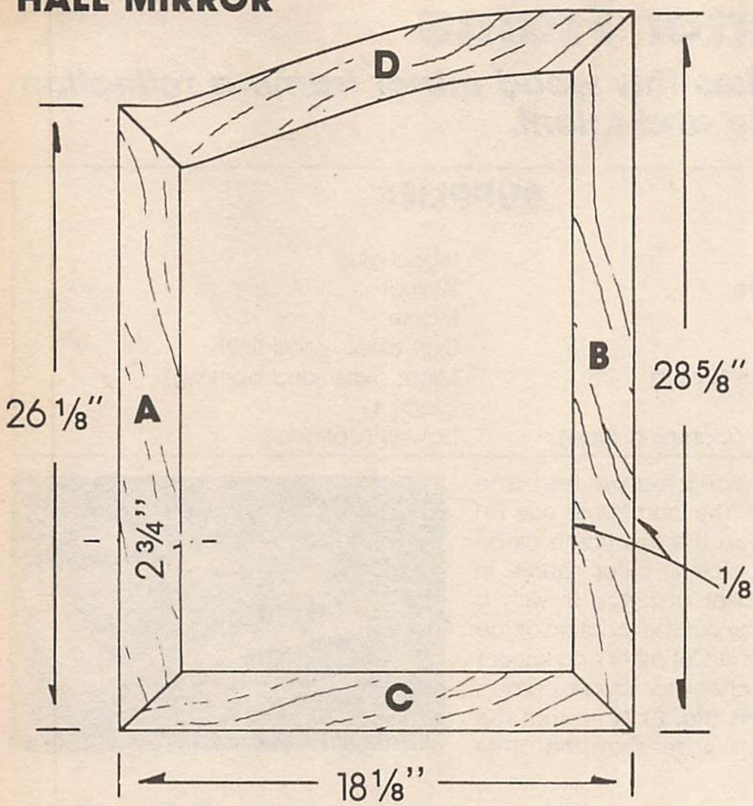
Continued on page 11

BILL OF MATERIALS

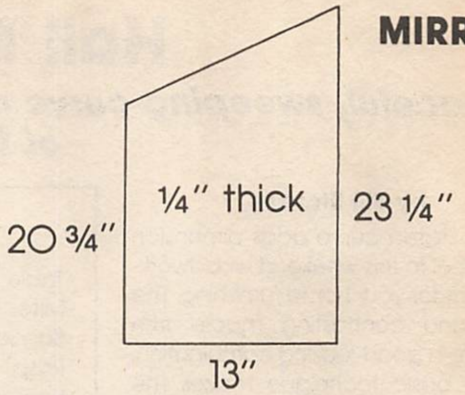
Part	Description	Size in inches	Quantity
A	Left frame upright	1 x 2¾ x 26⅛	1
B	Right frame upright	1 x 2¾ x 28⅝	1
C	Bottom horizontal	1 x 2¾ x 18⅛	1
D	Top horizontal	1 x 6* x 18½* *(To acheive proper miter work, piece D will require cutting oversized board to fit other frame units.)-	1
E	Mirror glass	¼ x 20¾ (left) 23¼ x 13 (right)	1
F	Backing board	⅛ x same as mirror	1
G	Securing strips	¼ x ¼ cut to length	4
H	Brass brads	⅝ length	18
I	Picture wire (29-gauge)		
J	Washers	⅜ diameter	2
K	Pan-head screws	½ length	2
L	Splines	Thickness of saw blade x triangles 2 x 2 x 3	8

Hall Mirror Frame Plans

HALL MIRROR

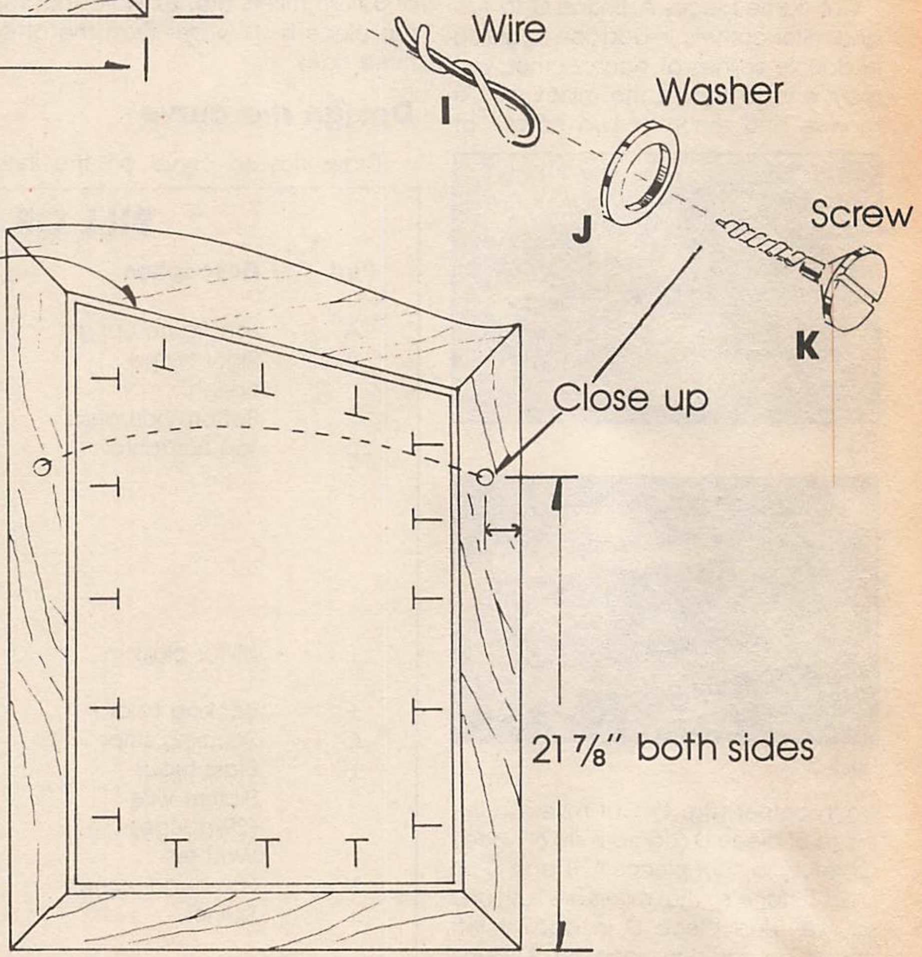


MIRROR



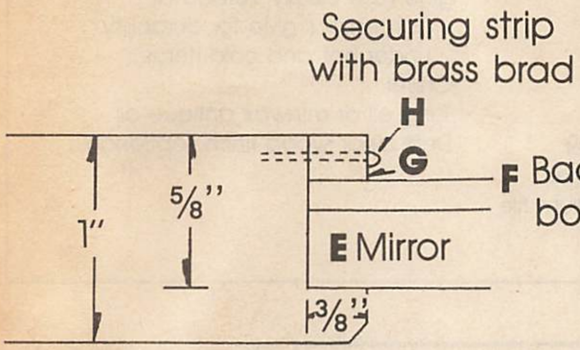
Note:

1. Straight edge on curved frame unit
2. Wood securing strips on all edges
3. Approximate locations of brads

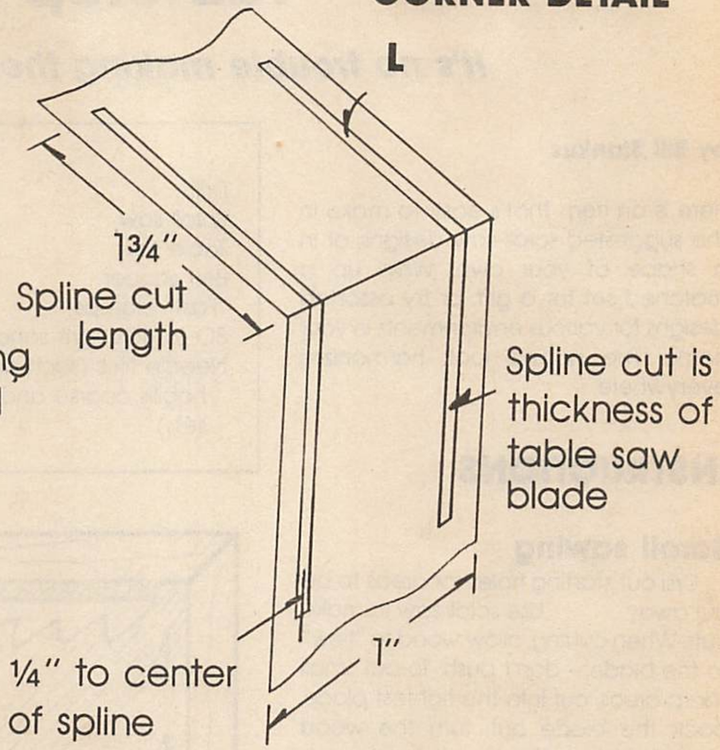


BACK

FRAME CROSS SECTION



CORNER DETAIL



Hall Mirror Frame

Continued from page 9

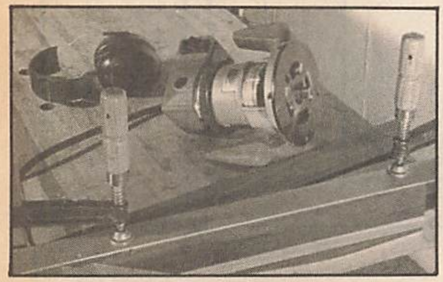


Fig. 4

Cut the rabbets

Cut rabbets on pieces A, B, and C. Save the waste strips for securing strips (Part G). Using a router, straight ¾" bit, and clamped-on straight edge, rout the rabbet in piece D (**fig. 4**).

Chamfer inside edges

Chamfer all inside edges of frame; sand inside surfaces to finish. Glue up frame (assembled frame shown in (**fig.5**). Draw a line on the outside of piece D that duplicates the inner shape. Cut this shape; rasp and sand smooth.

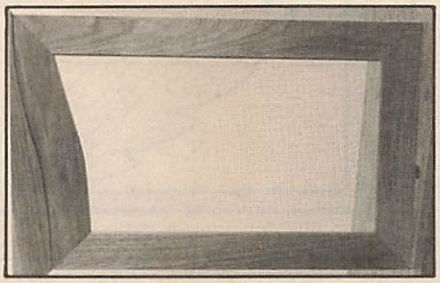


Fig. 5

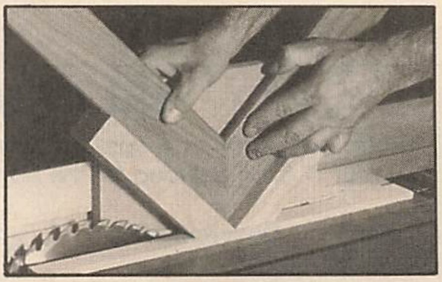


Fig. 6

Cut the splines

Make a jig which allows cutting spline cut on table saw. Make spline cuts at each corner (**fig. 6**). Cut splines to thickness of saw blade (use a contrasting wood such as maple). Glue splines into spline cuts (**fig. 7**). When glue is set, trim splines; sand entire frame smooth. Chamfer outside edges of frame.

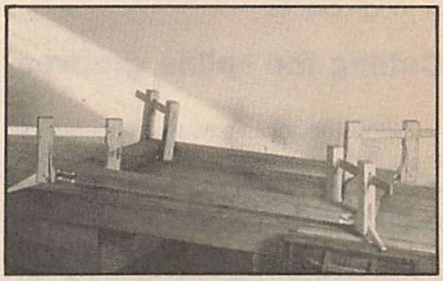


Fig. 7

Finishing

Finish with spray lacquer (Deft Clear Wood Finish). Insert mirror and backing board. Cut securing strips to fit rabbets. Predrill brad locations so that the holes in the strips are larger than the brads. Don't drill holes in frame. Use brad setter to drive brads into frame. Install screws, washers, and hanging wire as shown. Hang mirror.

Home Furnishings 3

Tabletop Trivets

It's no trouble making these handy hot plates!

by Bill Stankus

Here is an item that's easy to make in the suggested scroll-saw designs, or in a shape of your own. Whip up a matched set for a gift, or try assorted designs for various environments in your home. The natural look harmonizes everywhere.

SUPPLIES

- Drill
- Scroll saw
- Table saw
- Belt sander
- "Fast" clamps
- 80 to 400 grit sandpaper
- Needle files (such as grobet habilis coarse and medium file sets)
- glue (use epoxy instead of carpenter's glue for durability under hot and cold items)
- Chisel
- Tung oil or minwax antique oil
- Deft clear wood finish (optional)

INSTRUCTIONS

Scroll sawing

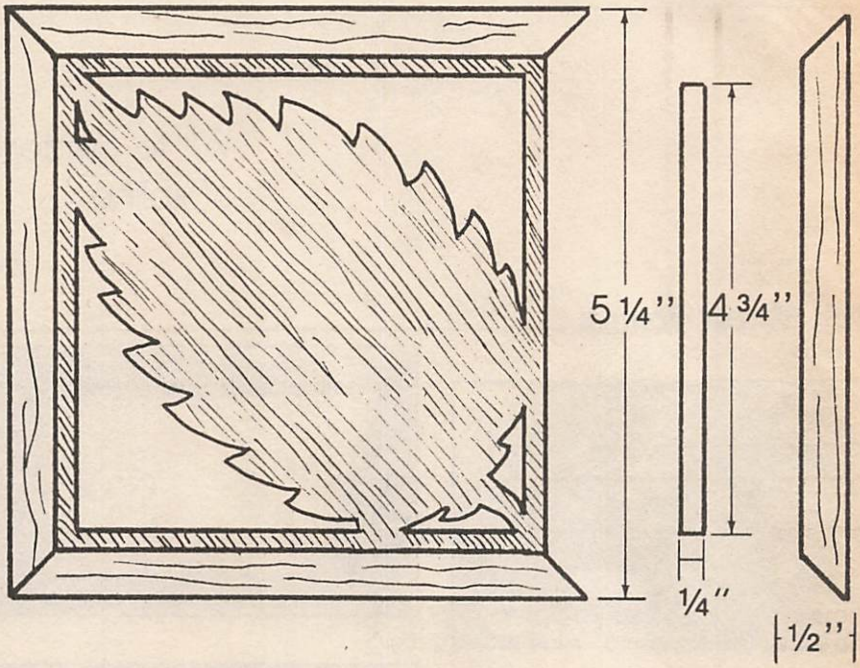
Drill out starting holes for areas to be cut away. Use scroll saw to make cuts. When cutting, allow wood to "flow" to the blade – don't push. To cut small sharp areas, cut into the tightest place, back the blade out, turn the wood around, bringing the smooth back edge of the blade into the saw cut, and then saw outward. Use needle files and strips of sandpaper to smooth out any flaws or rough places.

Cutting the spline grooves

Once the table saw is set up, cut all the spline grooves at once to insure consistency and proper alignment of center piece to edge pieces. Set the blade depth such that it will not cut too deeply into the pattern piece. Mark a side "A" on center and edge pieces. Keep this mark to the blade side of the fence; cut the spline grooves in both center and edge pieces.

Mitering

Miter corners of all side pieces precisely and accurately. Test each piece against the side of the center piece to determine its proper length and fit.



BILL OF MATERIALS

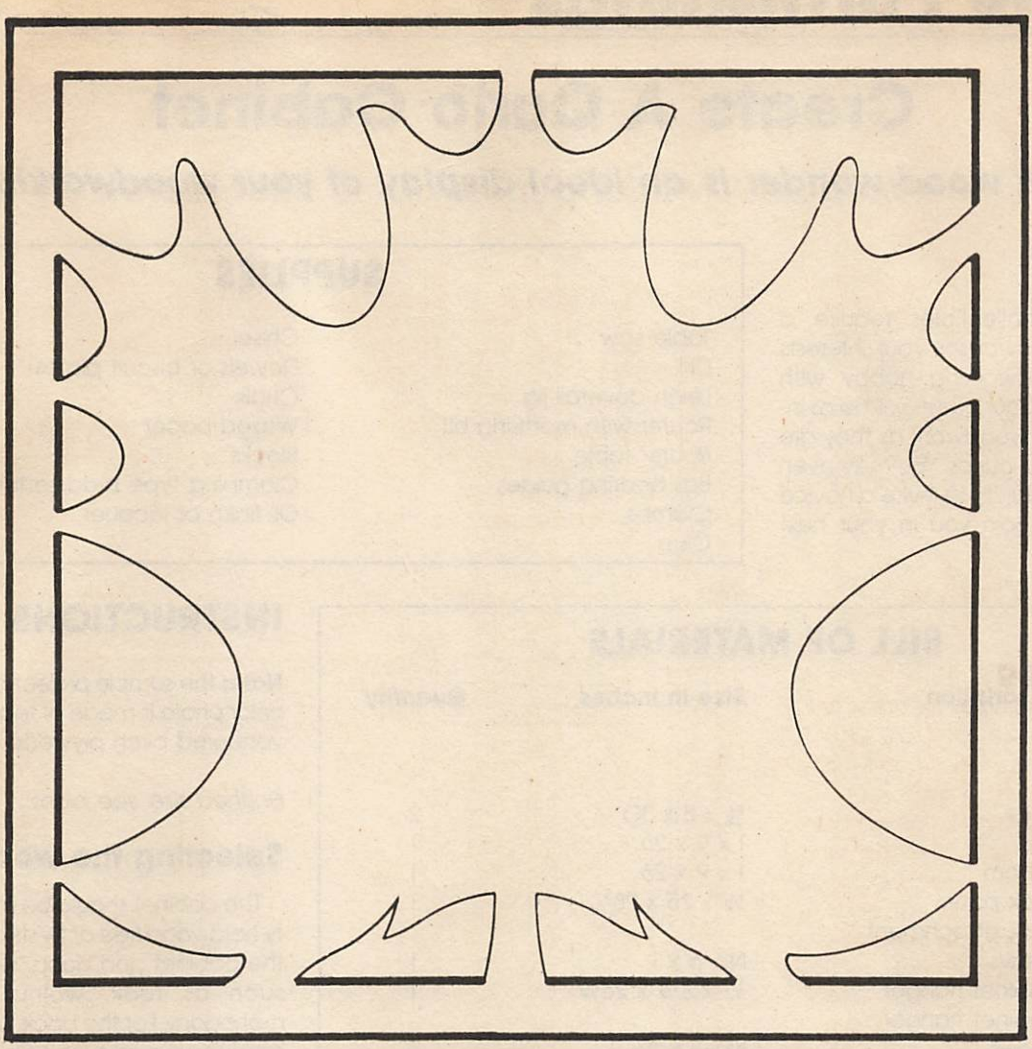
Note: use cherry or maple hardwood for the edges; use cabinet-grade walnut or birch plywood for the patterned center.

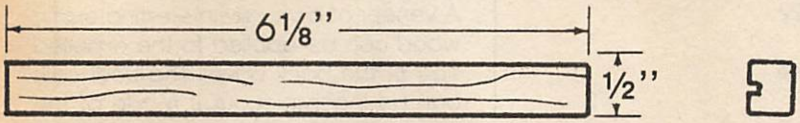
Part	Description	Size in inches	Quantity
A	Sides	½ x ½ x 6⅛	4
B	Center	½ x 5¼ x 5¼	1
C	Splines	¼ x width of table saw blade cut x 4¾	4
D	Self-adhesive felt pads	5/16 in dia.	4

Making the splines

To make the splines, cut one or two long strips of wood equal to the saw blade thickness and groove width. Then

Full-Size Trivet Pattern





cut these strips into shorter lengths. Insert the splines into the center piece; rub glue onto the mitered faces and center portion of the side pieces. If they are properly aligned, there should be little variation between parts.

Gluing

Glue with two sets of clamps. Before tightening clamps, wiggle the pieces to adjust them for a flat fit.

Once the glue has set and hardened, use a chisel to scrape and cut away any dried glue. Hand sand the top and bottom surfaces flat. Use a belt sander and a fine-grit belt to sand the edges; slightly round over all corners and edges.

Finishing

If your trivets are principally for decoration, you may select a finish such as tung oil or Minwax Antique Oil. For functional use, spray-on lacquer finishes like Deft Clear Wood Finish are more durable and protective. Follow manufacturer's recommended application procedure and apply at least six coats.

Finally, apply self-adhesive felt pads to the underside of each trivet.

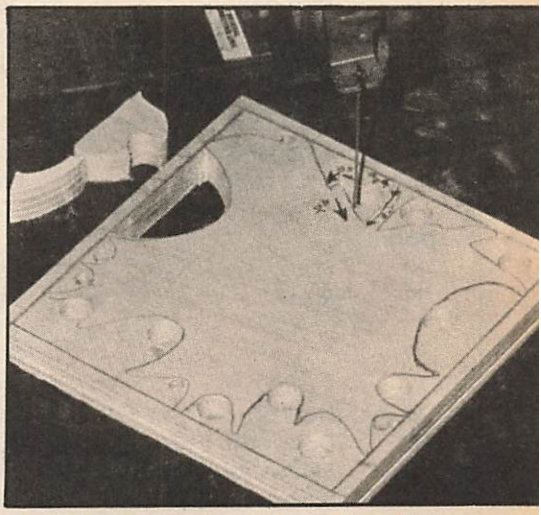


Fig. 1 *Scroll saw using drill holes to cut into tight corners.*

Reprinted with permission from Dremel Compact Project Plan No. 56. For more information about where to obtain this project plan (including additional trivet patterns) or other quality project plans and compact power tools used in this project, please see the Dremel address in our Source of Supply list on page 70.

Home Furnishings 4

Create A Curio Cabinet

This teak wood wonder is an ideal display of your woodworking skill.

by Bill Stankus

Your favorite collectibles require a cabinet that showcases your interests and your woodworking hobby with equal attention. Your guests will be as interested in your woodwork as they are intrigued by your curios. You may even have the opportunity to invite a novice woodworker to join you in your next project!

SUPPLIES

- Table saw
- Drill
- Leigh dovetail jig
- Router with mortising bit
- Router table
- Ball bearing guides
- Clamps
- Glue
- Chisel
- Dowels or biscuit plates
- Chalk
- Waxed paper
- Blocks
- Clamping type brad setter
- Oil finish or lacquer

BILL OF MATERIALS

Part	Description	Size in inches	Quantity
Cabinet			
A	Sides	7/8 x 8 x 30	2
B	Top	1 x 9 x 26	1
C	Bottom	1 x 9 x 26	1
D	Back panel	1/2 x 25 x 28 7/8	1
E	Back attachment screws	No. 6 x 1	1
F	Cabinet hanger	1/2 x 3 1/2 x 25 1/2	1
G	Cabinet hanger screws	No. 8 x 1 1/2	6
H	Wall hanger	1/2 x 2 1/2 x 22	1
I	Wall hanger to wall screws	No. 6 drywall x 1 5/8	2
J	Brass hinges	1 1/2 W x 2 L	4
K	Glass shelves	1/4 x 7 x 24 3/16	3
L	Shelf supports	1/4 dia. shaft	12
Doors			
M	Stiles	11/16 x 2 1/4 x 27 15/16	4
N	Rails	11/16 x 2 x 8 7/16* (*Note: If rails are mortised to stiles, add 2 1/2 to length)	4
O	Door lip	5/16 x 3/4 x 27 15/16	1
P	Door pulls	5/8.x 11/16 x 1 1/2	2
Q	Screws for lip to door	No. 4 x 1/2	5
R	Screws for pulls	No. 6 x 1	4
S	Glass	1/8 x 8 7/8 x 24 1/4	2
T	Securing strips for stiles	1/4 x 1/4 x 24 1/4	4
U	Securing strips for rails	1/4 x 1/4 x 8 7/16	4
V	Brass brads	1/2	32
W	Double-style magnetic door latches	---	1

INSTRUCTIONS

Note: the sample project pictured in the color photo is made of teak with ebony-veneered birch plywood.

Finished size: see plans.

Selecting the wood

The cabinet should be made of quality hardwood free of twists and whine. For the cabinet and doors, select a wood such as teak, walnut, cherry, or mahogany. For the back, use a cabinet-grade plywood such as birch or maple. A veneer of a visually interesting exotic wood can be applied to the exposed side of the back panel. The door pulls can be inconspicuous if made of the same wood as the door; or for contrast the pulls can be made from another wood.

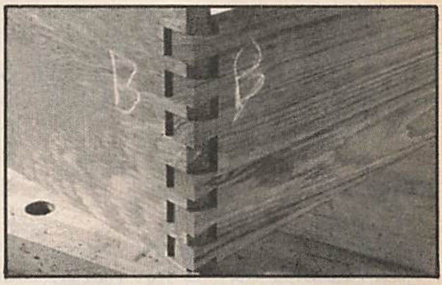


Fig. 1

Making the cabinet

Cut all pieces to dimensions as noted in the Bill of Materials list. Sand smooth.

Cut dovetail tails in side pieces (**fig. 1**). Cut dovetail pins in top and bottom

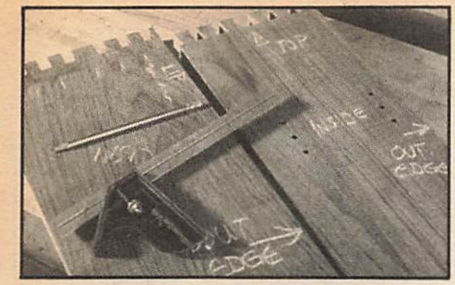


Fig. 2

pieces. Note: if after dovetails are cut the inside dimension of the cabinet is not 24¼" x 28", adjust all dimensions of doors, shelves, back, and hangers.

Drill holes for shelf supports (**fig. 2**). As shown in **Figure 2,** use chalk to mark useful information.

Shape the front edge of the top and bottom pieces (B, C). Glue up the cabinet (**fig. 3**). Use blocks and waxed paper beneath clamps. Be certain cabinet is square. Check by measuring across the diagonal corners. After the cabinet is glued, clean off all residue.

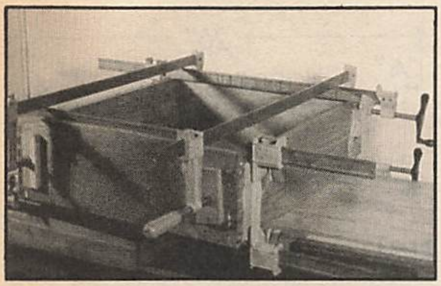


Fig. 3

Cut a rabbet on the back edge of the cabinet with a router using a mortising bit and ball bearing guide for ⅜" rabbet (**figs. 4-5:** note the motise bit and two sizes of ball bearing guides; use these for ⅜" and ¼" rabbets). Unplug the router and change to ball bearing guide for cutting an additional ¼" rabbet across top piece and 3½" down both sides (**fig. 6**). Square cut the rabbet corners (**figs. 7-8**).

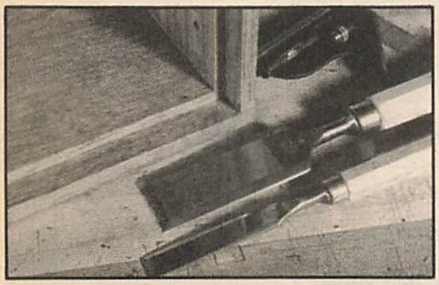


Fig. 4

Install the back panel with screws (no glue). Install the cabinet hanger with screws (no glue). Hanger must be flush to cabinet back edge. See **Figures 9-10.**

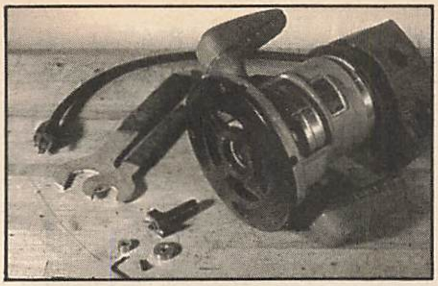


Fig. 5

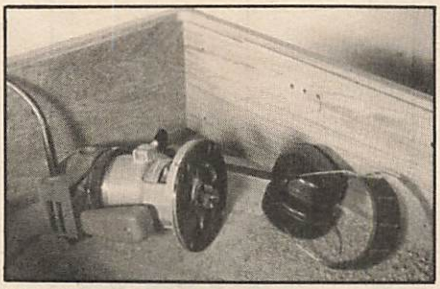


Fig. 6

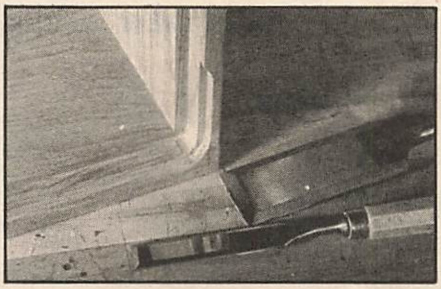


Fig. 7

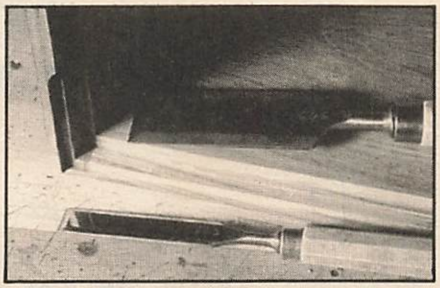


Fig. 8

Making the doors

To acheive a good fit, allow a slight overage to the door length and width. This will be trimmed when fitting the doors.

There are various methods of attaching the rails to the vertical stiles. If dowels or biscuit plates are used, use the 8⁷⁄₁₆" dimension. However, if mortise and tenons are used, add 2½" to the overall rail length so there will be 1¼" tenons at either end (**fig. 11**). Glue up the door frames, being careful to keep them square. Check squareness before glue set-up by measuring across the corners diagonally.

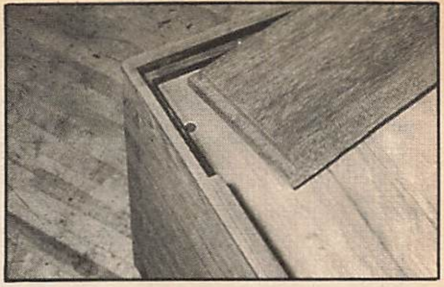


Fig. 9

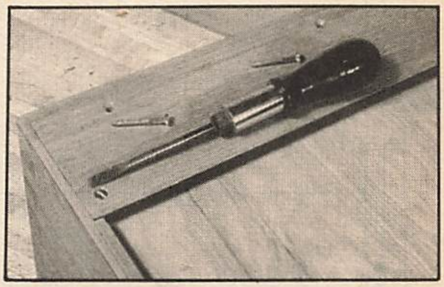


Fig. 10

After the glue has set, remove all glue residue and finish sand the doors.

Cut a rabbet on the inside edges of the doors with a router with a mortising bit and ball bearing guide for ⅜" rabbet. Square-cut the rabbet corners with a chisel.

Chamfer the exposed inner edge of the doors with a router and chamfer bit. Square-cut the corners with a chisel.

Cut notches on the door edges for the door lip.

Attach the door lip to the left-side door with glue and screws. Drill holes in lip oversize of screw diameter.

Mortise the hinges into the cabinet sides and attach with screws. Remember to pre-drill screw holes.

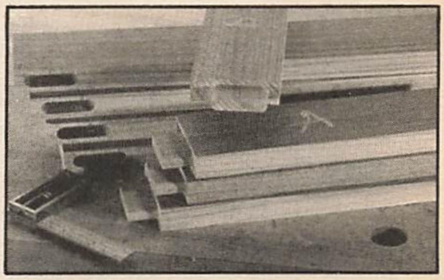


Fig. 11

Align doors to cabinet, adjust as necessary, determine hinge locations, mortise the hinge doors, and pre-drill screw holes. Do not attach doors at this time.

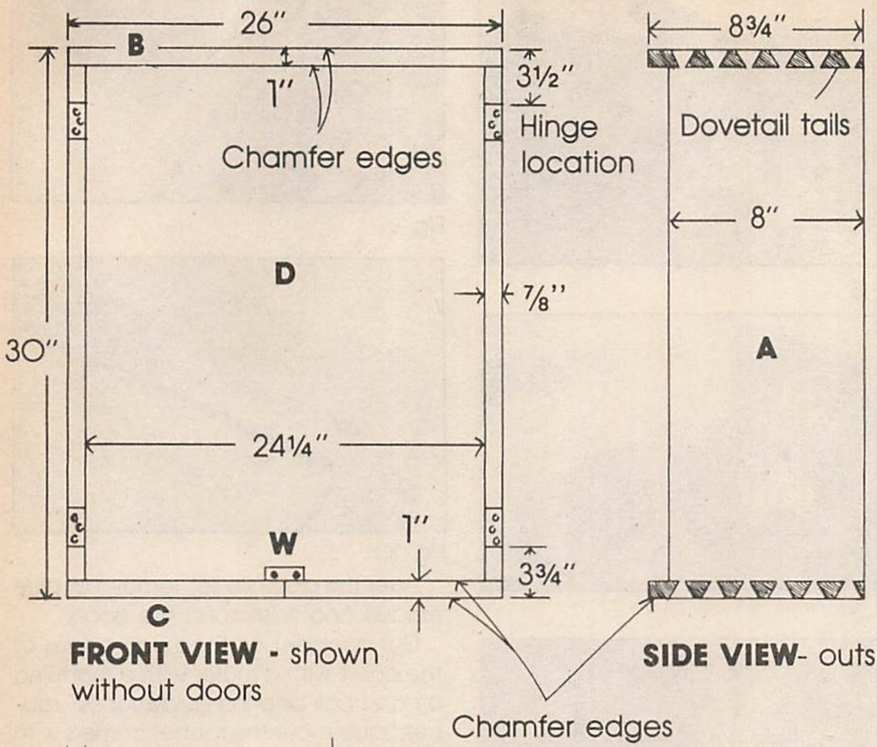
Remove doors.

Drill holes for door pulls. Be sure the holes through the doors are slightly oversize of screw diameter.

Finish-sand the cabinet and doors and

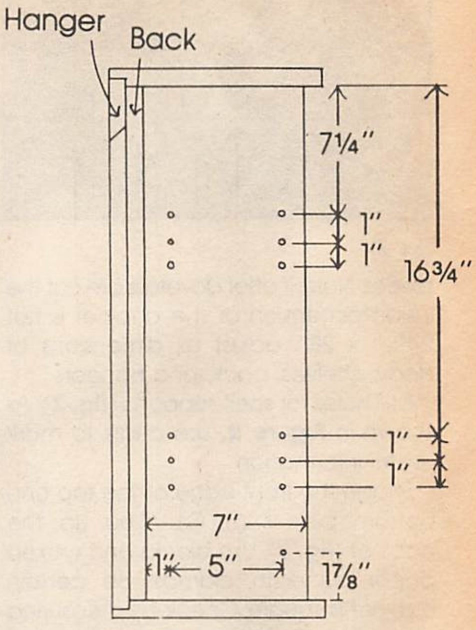
Continued on page 17

WALL CABINET

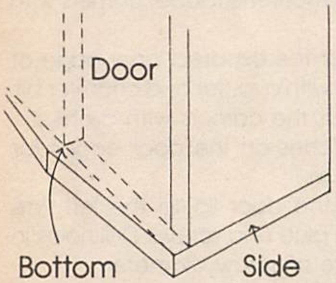


FRONT VIEW - shown without doors

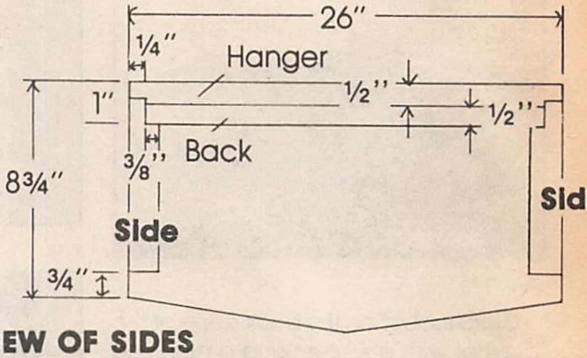
SIDE VIEW- outside



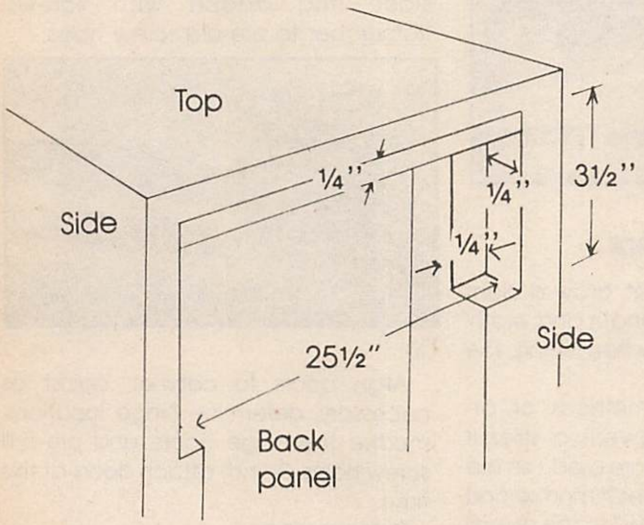
SIDE VIEW - inside

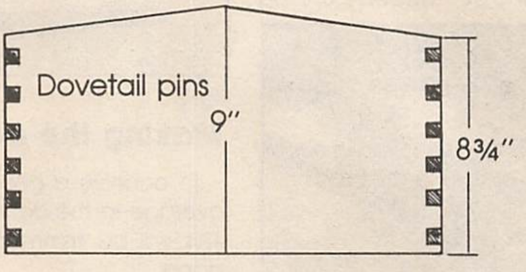


There will be a slight chevron shape in front of doors



TOP VIEW OF SIDES

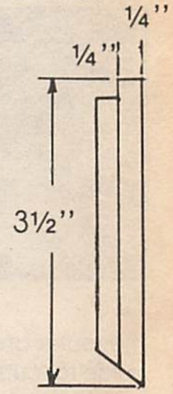




TOP/BOTTOM VIEW

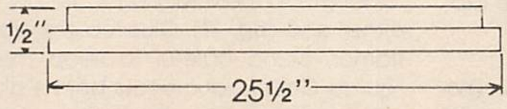
HANGER - side view

Hanger fits to back

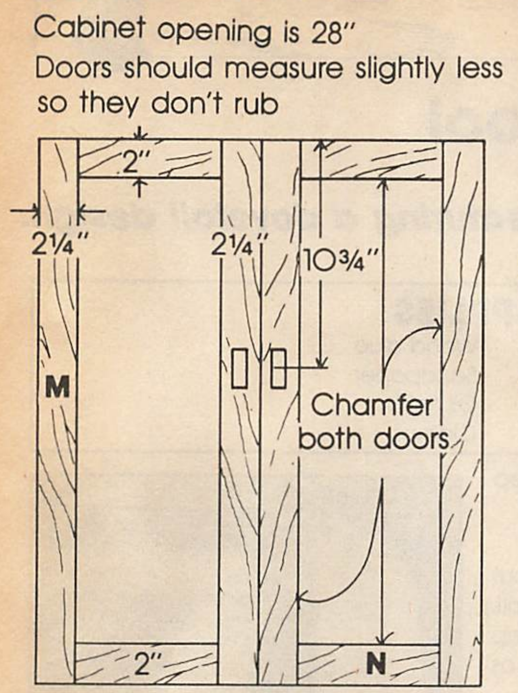


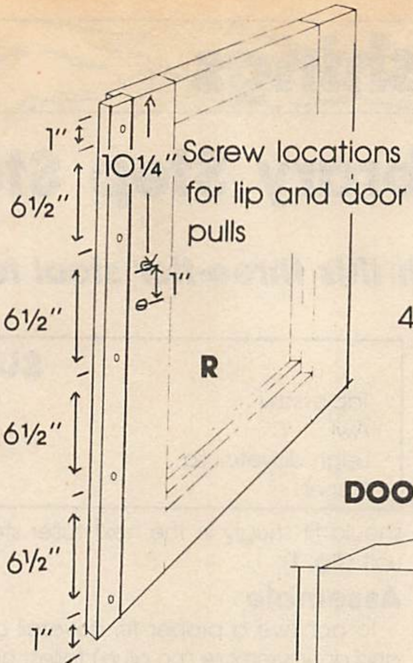
Rabbeted on 3 edges—not on bottom edge, which is 45°

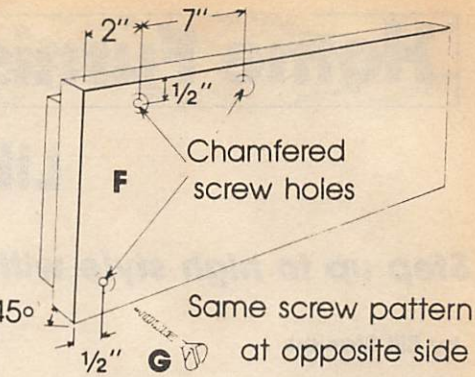
Cut rabbet into top and top 3½″ of sides to accommodate flush fit of hanger



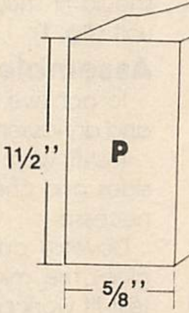
DOORS FRONT VIEW

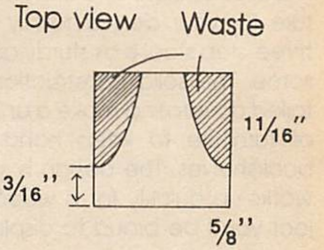




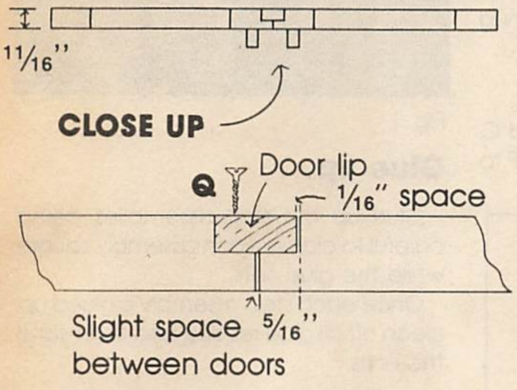


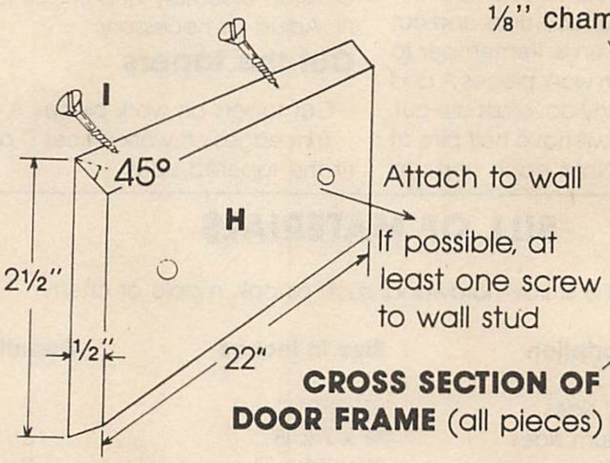
DOOR PULL

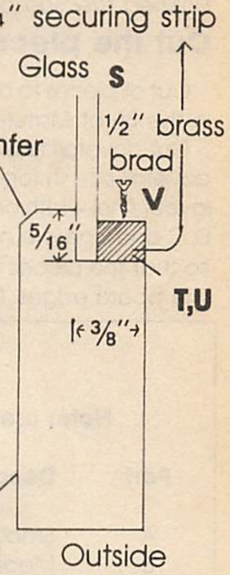




CROSS SECTION OF DOORS







CROSS SECTION OF DOOR FRAME (all pieces)

Curio Cabinet

Continued from page 15

apply a finish of your choice, such as rubbing oil or lacquer.

Fit glass doors and secure with wood strips and brass brads. Pre-drill brad holes in strips but not in door. Drive brads in place with a clamping type brad setter.

Making the door pulls

Cut a 12" x ⅝" x 1¹⁄₁₆" length of wood. Install a ⅝" cove bit in router table. Make several adjustments of the fence and make multiple passes of the work piece until the proper profile is attained.

Drill pilot holes in the door pulls for attachment screws.

Finish-sand pulls and finish with same finish as that used on doors.

Attach pulls.

Attach doors to cabinet.

Install a double magnetic touch latch at bottom of each door.

Attach wall hanger to wall; attempt to have at least one screw in wall stud. Use drywall screws.

Hang cabinet.

Install shelf supports and shelves.

Construction techniques

- Whenever two pieces are screwed together, pre-drill holes and be sure that the first board (just beneath screw head) has a hole larger than screw diameter. The other board should have a hole the proper diameter for screw.
- Countersink all screws so that the screws are flush fitting.
- Whenever possible, use phillips or square-drive screws for cleanest and easiest use.
- The lowest shelf is positioned so that it is approximately at the same height as the bottom door rail.
- Glass shelves are specified; however, wood shelves can be used. Simply change the spacings of the shelf supports.
- Commercially made round door pulls may be used.
- When drilling screw holes into sides for back panel and hanger, drill holes at a slight angle towards the center of the sides.

Home Furnishings 5

Library Step Stool

Step up to high style with this three-tier stool featuring a dovetail design.

by Bill Stankus

SUPPLIES

Table saw	Wood glue
Awl	Sandpaper
Leigh dovetail jig	Oil finish
Planer	Clamps

Flimsy one-step folding stools often make insufficient and unattractive furniture for your den or family room. This three-step stool is as sturdy as it is handsome. The solid construction and detailed dovetailing make a unique piece of furniture to keep handy by your bookshelves. The design is simple and works up quickly for a woodwork project you'll be proud to display.

INSTRUCTIONS

Finished size: see plans.

Cut the pieces

Cut all pieces to dimensions described in the Bill of Materials. Sand smooth.

Cut dovetail tails in side units and cut dovetail pins in top units. Remember to layout final width on work pieces A and D, C and F before any dovetails are cut, so that the pieces will have half pins at the board edges. Note: each step unit should fit snugly in the next taller step unit (**fig. 1**).

Assemble

To achieve a proper fit, dovetail cut and dry-assemble (no glue) tallest unit.

Test-fit work piece E between tall step sides and check for snug fit. Adjust as necessary.

Dovetail cut and dry-assemble (no glue) the middle step assembly and test-fit work piece F between the middle step assembly and check for snug fit. Adjust as necessary.

Cut the tapers

Cut tapers on work pieces A and C.

Trim edges on work pieces D and F to fit the tapered sides.

BILL OF MATERIALS

Note: use a sturdy hardwood, such as oak, maple or cherry.

Part	Description	Size in inches	Quantity
A	Small sides	5¾ x 9⅛* x 9	2
B	Medium sides	¾ x 7 x 18	2
C	Tall sides	¾ x 12* x 27 *(Note: cut actual width as shown in drawing)	2
D	Small step	¾ x 7¼** x 14¾	1
E	Medium step	¾ x 7 x 16¼	1
F	Tall step	¾ x 7⅜** x 17¾ **(Note: slightly oversized to accommodate cutting dovetails and to have uninterrupted taper to bottom of step)	1
G	Plugs	½ dia.	10
H	Drywall screws	1	10

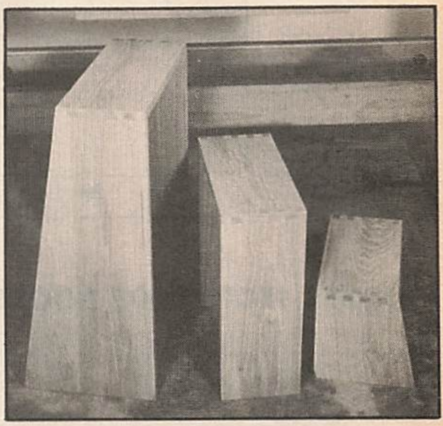


Fig. 1

Glue up

Glue up the step assemblies, being careful to clamp each assembly square while the glue sets.

Once each step assembly is glued up, clean off all glue residue and finish-sand the units.

Chamfer the edges

Chamfer or round over all exposed edges except for those step edges hidden behind side sides.

Drill the plug holes

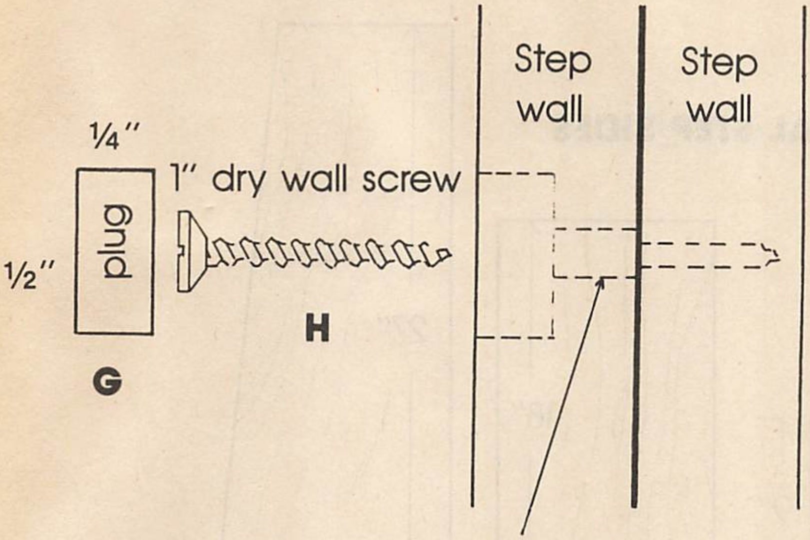
Drill plug holes and the enlarged screw hole as shown in close-up drawing I.

Place step assemblies on flat surface and slide them together; mark off screw locations with an awl.

Attach units together with screws; cover screws with plugs. Plane and sand plugs till flush with sides.

Finish

Finish with several coats of rubbed-on oil finish such as Minwax Antique Oil or Watco Natural Oil.

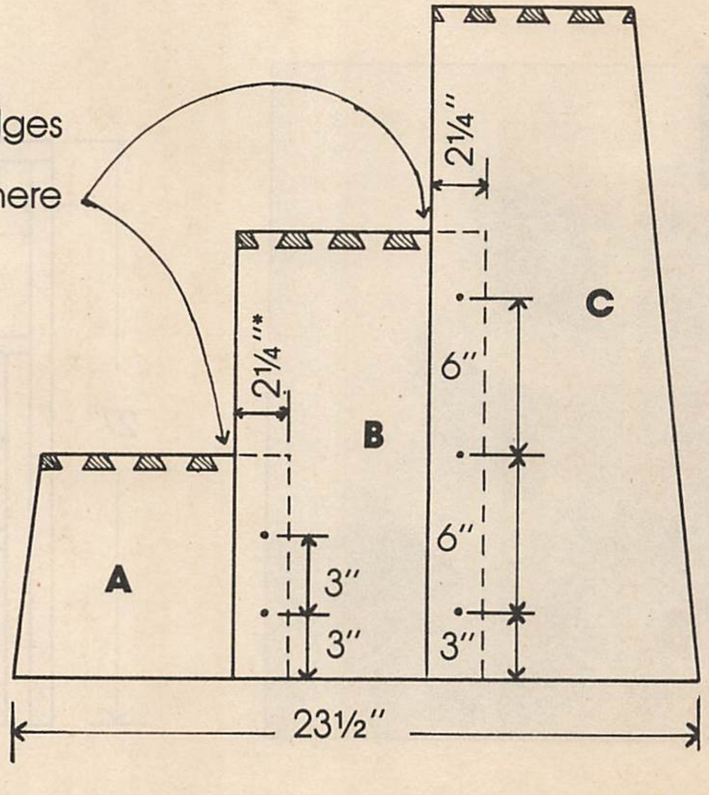


CLOSE-UP
DRAWING I

Note: drill this part of screw hole oversize to screw-shaft diameter

Use ½" plugs for screw holes

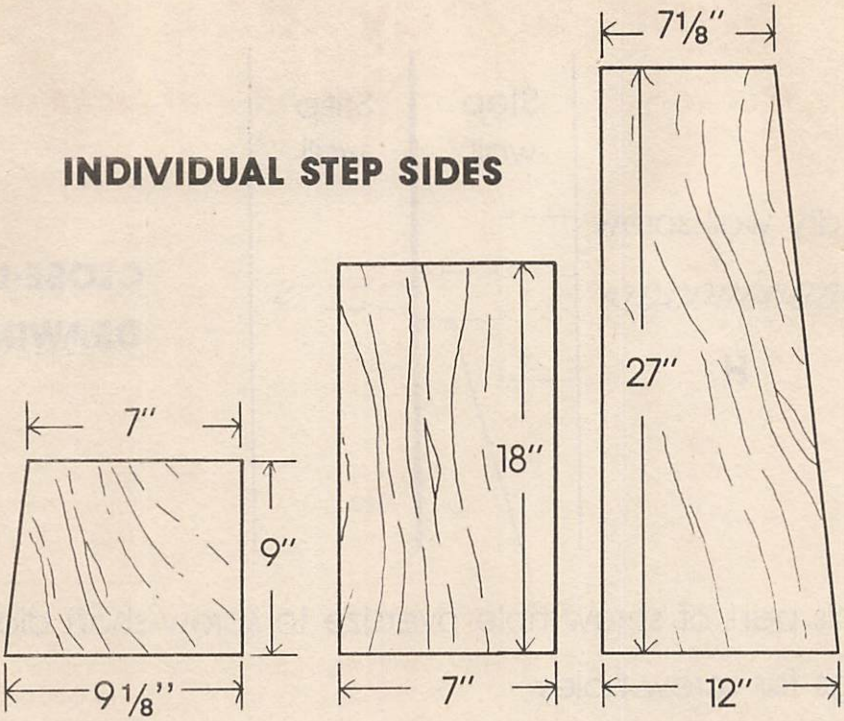
Use 1" screws in holes ¼" deep



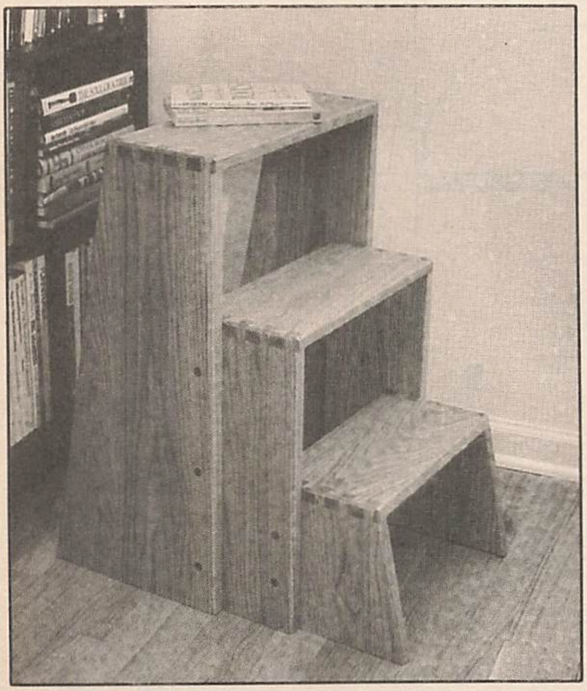
Chamfer all exposed edges

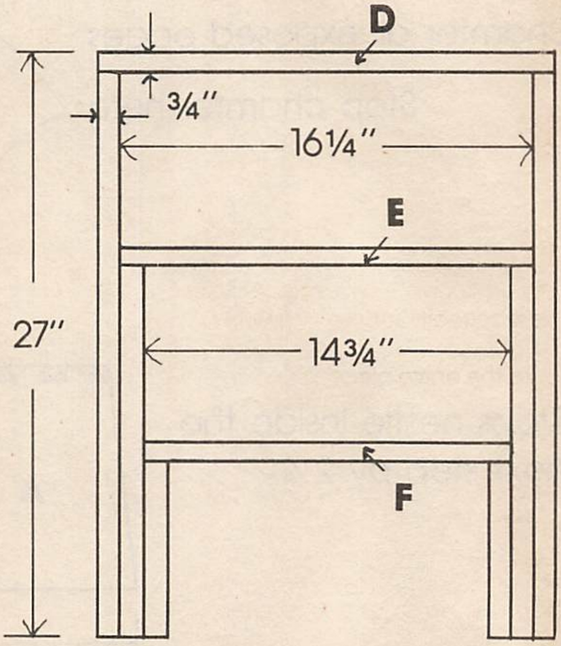
Stop chamfer here

*Steps nestle inside the
next step by 2¼"



INDIVIDUAL STEP SIDES





Folding Tray Table

A beautiful server on a sturdy stand that tucks away whenever you want.

by Bill Stankus

A hold-all for many reasons! Our fold-away tray can be hand-carried, set on a table, or attached to a stand you make yourself. Use it easily in your dining room, sun porch, den, nursery, or any place that suits your fancy. Choose interestingly colored wood and enjoy the construction of this very useful accessory.

INSTRUCTIONS

Making the tray

Cut all pieces for the tray to specifications and sand them free of blemishes. Use scroll saw to cut out the notches which will retain the tray on the stand (**Fig. 1**). Set up a table saw for cutting the mitered corners. Practice the cutting of miters with scrap wood, checking the angle with an accurate protractor. Once the angle is correctly set, cut all tray corners. Rub glue on the mitered corners and secure the entire piece with a flexible band (belt) clamp. Check the squareness of the tray and adjust as necessary before the glue sets. Allow sufficient drying time before any other work is attempted.

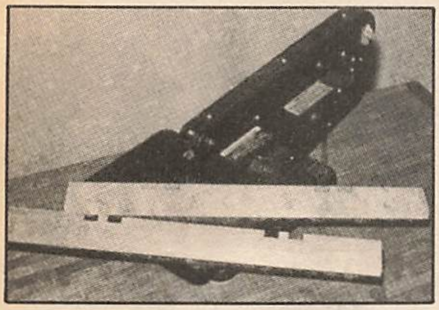


Fig. 1

The miter joint is not one of the stronger wood joints because end grain is glued against end grain. To strengthen the joint, it is recommended that dowel pins be inserted through the miter joint. Drill ⅛" holes and glue ⅛" dowel pins (cut from ⅛" x 36" dowel stock) into these holes. Stagger the pins around the corners in an overlapping pattern for an attractive and strong joint (**Fig. 2**). When glue is set, cut the excess pin length off and finish-sand the tray.

To create a visually interesting edge, set up the Dremel Moto-Tool, router base, and No. 612 beading bit and run a beaded edge completely around the outer top and bottom edges (**Fig. 3**). Larger routers and bits are too massive for this delicate beading work.

Chamfer or round over the edges of

Continued on page 23

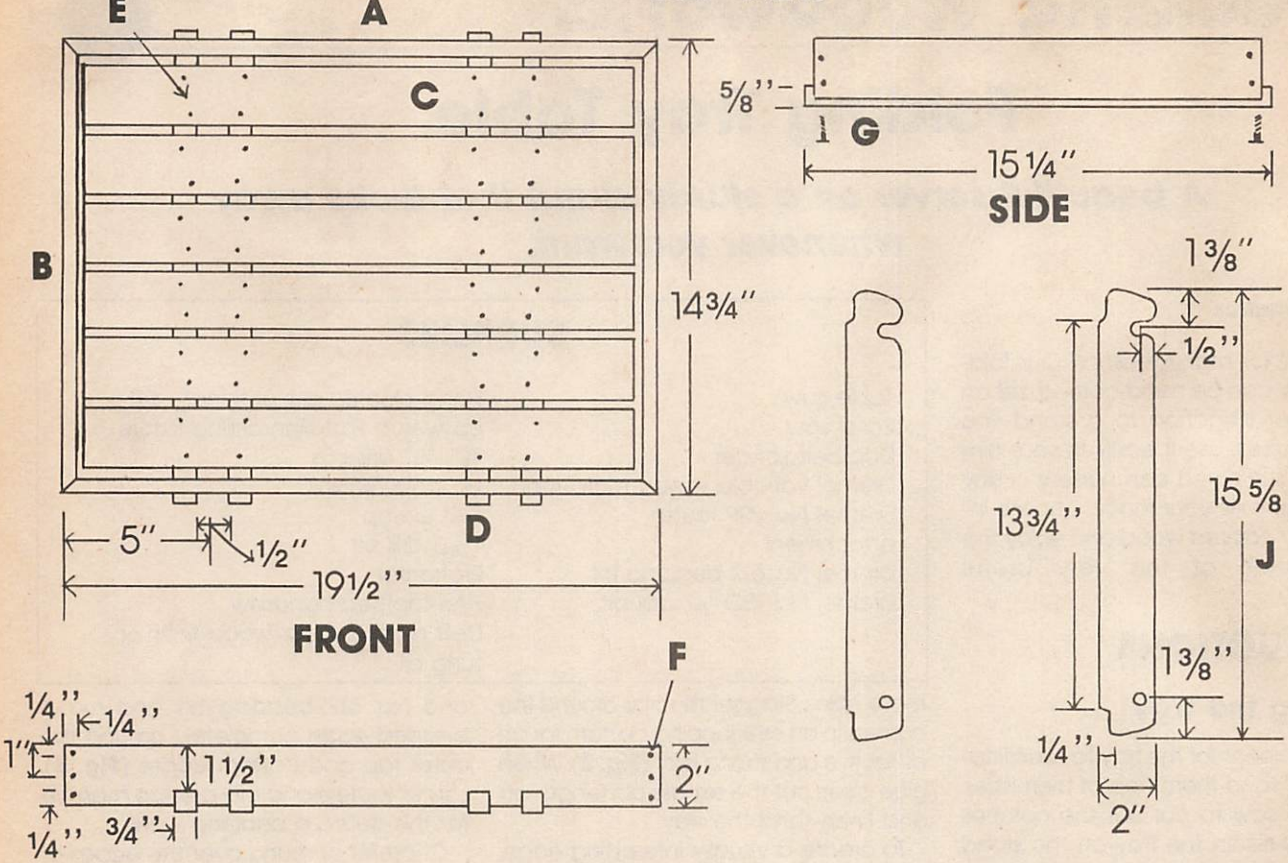
SUPPLIES

- Table saw
- Scroll saw
- Disc belt sander
- Dremel variable speed moto-tool
- Dremel No. 229 router attachment
- Dremel No. 612 beading bit
- Dremel No. 150 ⅛" drill bit
- Hand electric drill optionally set up with a Portalign drilling fixture
- ⅜", ½" drill bits
- ⅜" counter sink
- Belt clamp
- 11/64" drill bit
- Protractor
- Fine-toothed handsaw
- Deft aerosol clear wood finish or tung oil

BILL OF MATERIALS

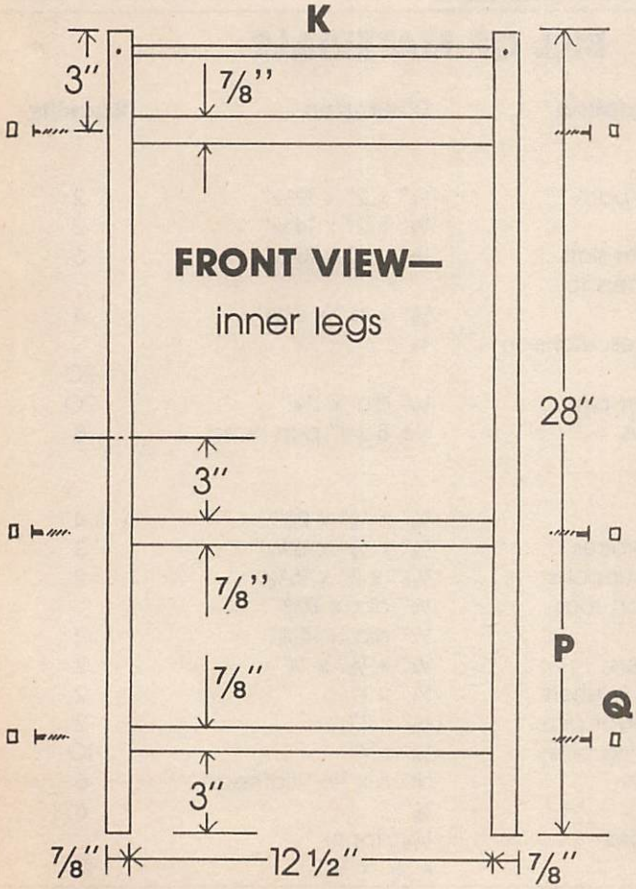
Part	Description	Dimension	Quantity
Tray			
A	Front, back	½" x 2" x 19½"	2
B	Sides	½" x 2" x 14¾"	2
C	Bottom slats	½" x 2" x 18⅜"	6
D	Retainers to stand	⅝" x ¾" x 15¼"	4
E	Brass escutcheon pins	¾"	20
F	Corner pins	⅛" dia. x 1¼"	20
G	Screws	No. 8 x 1" pan head	8
Stand			
H	Legs	⅞" x ⅞" x 28"	4
I	Leg braces	⅞" x ⅞" x 12½"	3
J	Tray supports	7/16" x 2" x 15⅝"	2
K	Support rods	½" dia. x 17¼", ½" dia. x 14⅜"	2
L	Spacers	½" x ⅞" x ⅞"	2
M	Daisy washers	¼" x 1"	2
N	Leg pivot pins	⅜" x 3"	2
O	Securing pins	⅛" x 1"	10
P	Screws	No. 8 x 1½" flathead	6
Q	Plugs	⅜"	6
R	Wedges	1/16" taper x ⅜" x ¾"	2

TOP VIEW



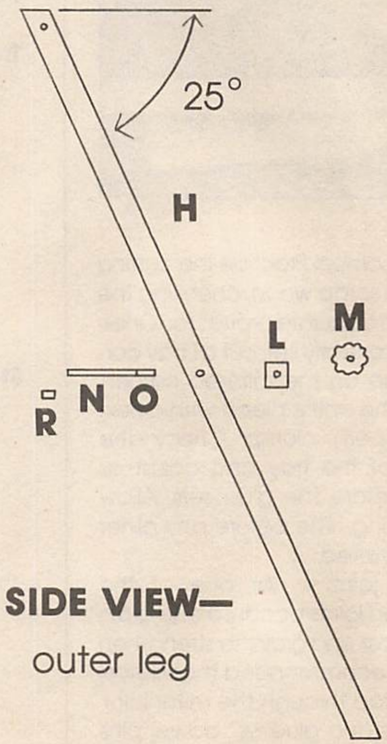
SIDE

FRONT



FRONT VIEW—

inner legs



SIDE VIEW—

outer leg

Folding Tray Table Plans

Continued from page 21

tray retainers, and test their fit in the cut notches. Adjust the fit and insert retainers. Mark center line of the tray edge to that of the retainers, drill screwholes (11/64"), and secure them with No. 8 x 1" screws.

Set in the two outer bottom slats, measure their positions, and secure to retainers with brass pins. Once these are secured, lay in the remaining slats and nail them down.

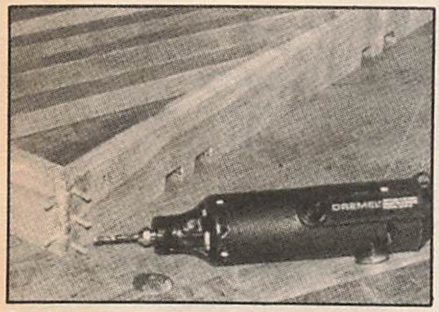


Fig. 2

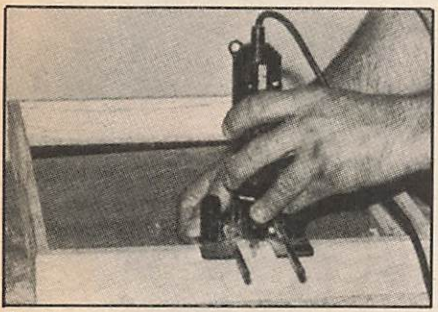


Fig. 3

Making the Stand

Although there are many pieces for the stand, the construction is straightforward and not difficult if the proper assembly sequence is observed.

Cut all pieces to specifications and finish-sand all surfaces. Allow extra length to all dowels and cut this excess off after assembly.

For the stand to sit flush on a floor, trim the leg bottoms to 25 degrees. Also cut the top of the legs at 25 degrees for visual symmetry. For a tray of this width, 25 degrees is the proper angle; any change in this width will change the cut-off angle.

Mark locations for support rods and outer pivot pins; drill these holes clean, straight and true. To accomplish this, be accurate: if you "eyeball" the drilling, use a portable drill setup with a Portalign drilling device – or use a drill press.

Select two legs for the inner pair of legs and assemble these with three braces (**Fig. 4**). Mark locations of braces and legs, and apply a bit of glue to these surfaces.

The glue is mostly for holding the pieces together until the screwholes are drilled and the pieces are firmly attached to each other with screws. Counter sink screw holes approximately ⅜" deep, set in screws, and cover them with plugs. Allow glue to set; flush-trim plugs to legs, and finish-sand.

With a fine-toothed hand saw, make a cut ½" deep down the length of the pivot pins. Rub a little glue on the inside of the pivot pin hole, then insert pin from the inside so that the cut end of the pivot pin extends out of the hole approximately ⅛". Make a hardwood wedge and tap it into the saw cut. Allow glue to set and trim excess from pin flush with legs. The wedged pivot pin will not loosen with use and time; this is an excellent method of tightening "too large a hole and too loose a pin."

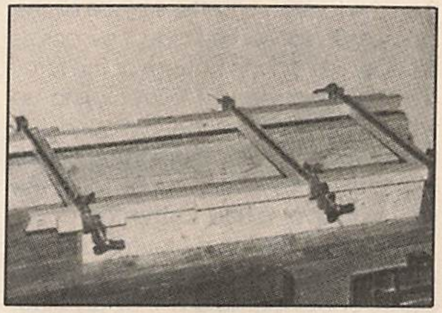


Fig. 4

The spacers that fit between the legs to prevent rubbing wear are simply made. For each spacer, drill a ⅜" hole and cut a ⅞" square around the hole. Once these are cut, press them on the pivot pins, between the legs.

Using scroll saw, cut several "daisies" from a section of hardwood (**Fig. 5**). Make an extra one in case of breakage during assembly. Drill the ⅜" hole first and then cut out the daisy. At this time position all legs in their final configuration and attach them together with the daisy washers (**Fig. 6**). Drill a ⅛" hole just to the outside of daisy and insert a ⅛" dowel pin that is ⅞" long.

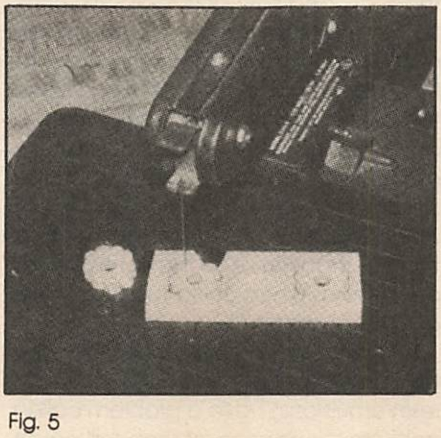


Fig. 5

Locate center mark for the two support rods in the tray supports and drill them out with a ½" drill bit. The open notch and the other shapes of the support can be cut with scroll saw.

Finish-sand edges with disc/belt sander, using a fine-grit sanding belt.

Slide supports onto support dowel rods and position rod through legs. Drill ⅛" holes through legs and support rods; drive ⅛" dowel pins into these holes to secure the piece together. Flush-trim pins to legs.

Set tray onto supports and align it squarely to stand. Remove tray and make a mark approximately ⅛" on either side of both supports. Drill ⅛" holes at these marks (drill them perpendicular to each other) and insert ⅛" x ⅞" dowel pins. Attach other support rod in same fashion.

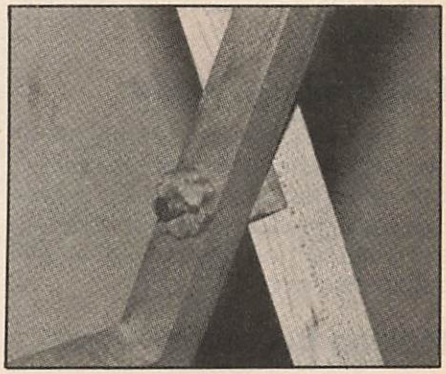


Fig. 6

Finishing

The business of a tray is to do work. Apply a finish which will provide the best wearing characteristics for the intended work. Consider Deft Aerosol Clear Wood Finish for a natural-looking surface, or tung oil for the soft glow of hand-rubbed oiled wood.

Reprinted with permission from Dremel Compact Project Plan No. 55. For more information about where to obtain this and other quality Dremel plans and compact power tools, please see the Dremel address in our Source of Supply list on page 70.

Weekend Woodworks

Bentwood Mirror Frame

Learn a basic bentwood technique and create an original wall hanging.

by Tom Crabb

Bending wood can give you a feeling of mastery over the material–although sometimes the project can seem to get the better of you! In the end, however, you can have the upper hand. The secret is to control both the wood and yourself. When bending wood you'll need a form. The form acts as a "mold" for your shape. The form should always be thicker than the wood itself so that you can bend the wood around it and create the shape you want. The following project is a good exercise in fashioning bentwood, makes a distinctive accent piece, and serves as an example of your skill in a new woodworking technique.

SUPPLIES

Band saw
Red or white oak: five strips, each 36" L x 1" W and resawn to 3/16" T
1/2" plywood: three pieces
Cherry wood
Belt sander
Poster board
OOOO steel wool
Linseed oil
Spray varnish
Mahogany stain
Electric drill (optional)
Weldwood plastic resin or epoxy
Web or belt clamps
Carbon paper
Dishwashing liquid
Mirror glass

INSTRUCTIONS

Finished size is approximately 16 3/8" L x 11" in diameter.

Preparing the wood

To prepare wood for bending, use a bathtub or other container of water. Fill it up only a few inches and add a little dishwashing liquid or fabric softener to the water, but be sure to rinse this off before clamping.

Making the mirror brace

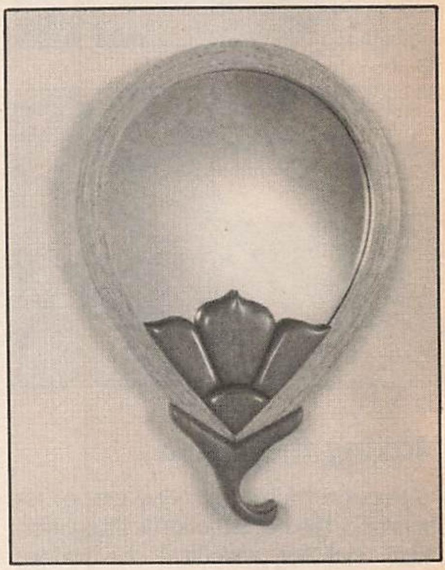
Take one of the oak strips and rip to 3/8" wide so you can lay it into the form first for the mirror brace (the part that will hold the glass – more on the form below). Saw the rest of the strips and lightly sand all strips to remove saw marks. Soak them overnight in a few inches of water, weighted down with a rock (or bottle of shampoo).

While the strips are soaking, make the form, which is the shape you're bending the wood to. You'll need three pieces of 1/2" plywood, one for the base and two for the actual shape. Make sure the base is thicker than the strips and large enough to be clamped to a bench without being in the way of the clamps that will hold the strips to the form. Take the other two pieces and cut them to shape **(fig. 1).** Glue these pieces together, clean up the edges on the belt sander, and cut out the center of the form to allow a better surface for the clamps. Screw some scrap 1 by across the saw kerf on the bottom of the form. This will keep the kerf from closing up when the strips are bent around the form. Wax the form thoroughly before gluing up – otherwise your mirror frame will be forever glued to the form.

Now bend the strips around the form while still wet, and hold them with a web clamp or belt clamp until they dry. After the strips are dry, there will be some springback, but they will be much easier to handle.

You can glue the frame up in two sessions for two reasons. First, the two inner strips will need to be trimmed – either clamp them into position on the form and saw them on the band saw or by hand, or mark them on the form, take them off, and saw and reclamp them. So, getting them positioned for gluing is a little bit tricky. The other reason is that trying to glue all five strips at once, bend them into position, and clamp them is a hard job for more hands than the normal person possesses. The last three strips don't have to be joined and so are much easier to position. Make sure, though, that you keep the first two strips on the form when doing the next three, or they all won't fit.

Because wood glues like Titebond and Elmer's Carpenter's Glue (polyvinyl resin emulsions) have a problem called cold creep which, over time, will cause any bentwood project to unravel completely, you should use either epoxy (not the five-minute kind) or Weldwood Plastic resin. Neither of these glues is as convenient to work with as PVAs, but they won't allow cold creep.



The frame should be face down on the form so that you'll have a flush surface on the face side of the frame. Wipe out any excess glue which squeezes out between the mirror-brace strip and the second strip, so as not to foil the mirror brace.

The flower

The simplest way to make the flower is to use a piece of wood large enough to lay out the whole pattern as though it were to be used as one piece. Use car-

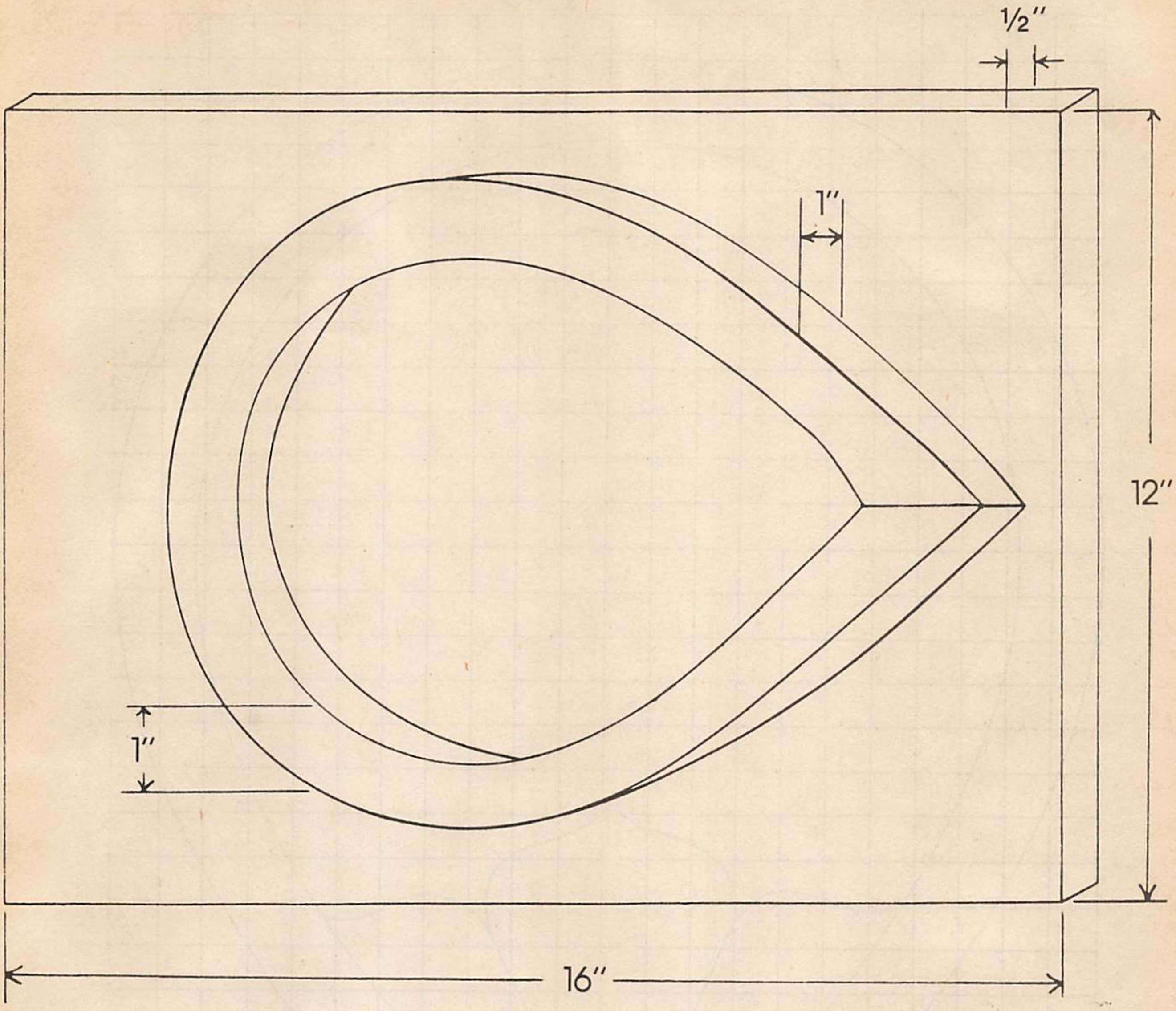


Fig. 1

bon paper to transfer the enlarged pattern to the cherry wood (see Scaling Up Patterns in instructions for Marbled Boxes in this issue). Saw off the stem as follows: cut in from one side of the V, back the saw out, and finish the cut from the opposite side. Then saw out the center of the flower and the petals. This method assures a proper fit. A second method uses smaller pieces of wood. Lay out each piece individually, being careful to make sure all pieces fit together.

Rabbet the back of the flower petals to match the mirror brace in a straight line across the bottom. When you cut the flower stem, use it to mark the lower frame to insure a good cut and fit.

The flower should be flush with the back of the frame so it will be higher than the frame in front. Round the edges of the flower pieces to provide definition and a smooth flow into the frame. This is best done on either the nose of a belt sander clamped to a bench, or a drum sander on an electric drill. Do the finish sanding by hand.

After the flower is sanded and stained with a little mahogany stain to increase the contrast, glue it into place the stem first, then the center of the flower, then the outside petals, and finally the center petal.

Finishing

Finish the frame with spray varnish and rub it with linseed oil and OOOO steel wool.

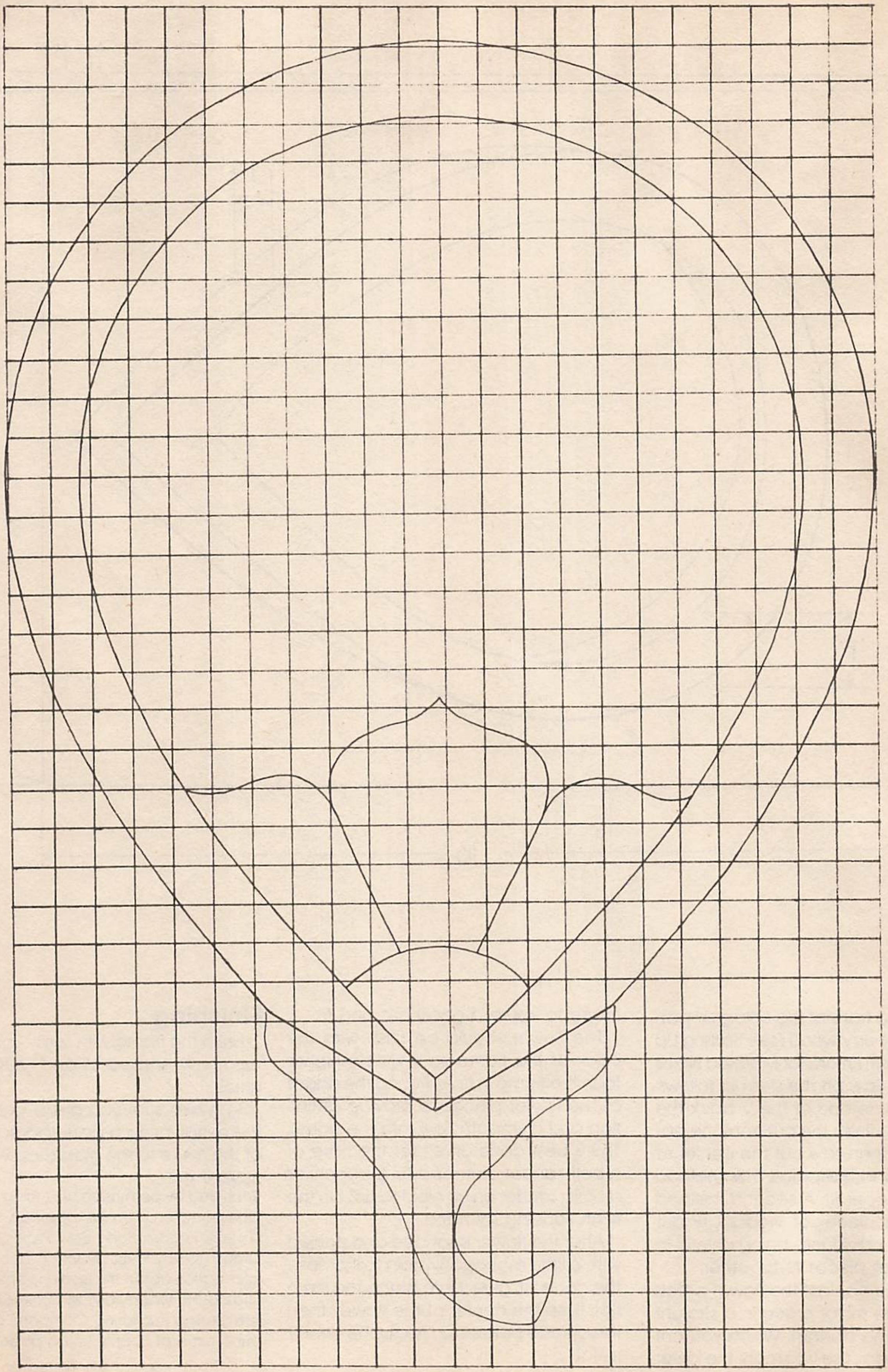
To make sure you get a good fit on the mirror, bring a posterboard pattern of the mirror to the glass shop when you have it cut.

Reprinted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *Band Saw Projects* by Tom Crabb ($9.95). ©1988 by Tom Crabb. For more information about this book and many other fine quality woodworking books, please see the Sterling Publishing Company address in our Source of Supply list on page 70.

Continued on page 26

Bentwood Mirror Frame Pattern

Scale up to ½" squares



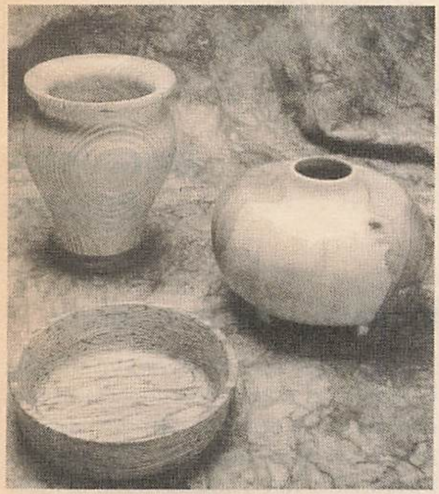
Skill-Building Projects 8

A Turn For The Better

Here are several easy-to-make decorative projects to help you hone your woodturning skills.

by Norris White

Turnings from laminate, a four-footed bowl, and distinctive salad bowls are simple yet striking projects you can be proud to call your own. You'll need a little working familiarity with woodturning and a dash of creativity and these projects will be a snap.



SUPPLIES

Baltic birch plywood
Cherry wood
Apple wood
Douglas fir parallam
Jointer
Lathe
Wood glue
Clamps
Bowl gouge
Bowl scraper
Internal boring bar
Sandpaper
Polyurethane
Paste varnish
Mineral spirits
Woodcarving tool
Double-sided carpet tape
Wood filler (as needed)

INSTRUCTIONS

Finished sizes are approximately 6½" H x 5½" dia. for vertically-striped vessel, 3¼" H x 4¼" dia. for horizontally-striped vessel, 5" H x 6½" dia. for four-footed bowl, and 1½" H x 5¾" dia. for salad bowl.

Turnings from laminate

The vertically- and horizontally-striped vessels are made from a laminate of Baltic birch plywood, which has very thin veneers (less than 1/16" thick) and no interior voids. Any kind of plywood will work, but the Baltic birch is quite attractive.

The vertically-striped vessel is made from a 6" square block which is cut into an octogon with a jointer before turning. The laminated block is made by gluing pieces of plywood together and clamping for twenty to thirty minutes. It's a good idea to allow a twenty-four-hour drying time before machining the block. A cherry wood base glued to the bottom of the laminate block–before it is made into an octogon–gives you something onto which you can screw the faceplate and adds an attractive base as well.

Keep in mind that use of a conventional gouge on a laminate block where the veneers run vertically will cause the veneers to fly off like a deck of cards in the wind. A die-grinder with a burr can be used on the outside, or with Baltic birch plywood, a bowl gouge will do the job. In a piece where the veneers run horizontally, conventional tools are all you need. Hollowing can be done with a bowl scraper, whether the veneers are vertical or horizontal. The vertically-striped vessel, which is about 6½" high and 5½" maximum diameter, is hollowed to about ¼" or less in thickness.

Laminate pieces require substantial sanding because of the different directions of the grains in the veneers. The vertically-striped piece is sanded for several hours on the lathe. The smaller, horizontally-striped piece requires about three hours of sanding on the lathe.

A combination of relatively thin walls and a diluted polyurethane finish gives laminated pieces some translucency. The finish is composed of polyurethane thinned one-to-one with mineral spirits. The first coat is brushed on until the wood will absorb no more, then wiped dry with a clean rag and left to dry twenty-four hours. The next coat is just brushed on and wiped off; all succeeding coats are done in the same way. The succeeding coats need only four to six hours to dry. The more coats, the greater the sheen. The vertically-striped vessel has ten coats. Applying ten coats in this manner is no more time-consuming than the application of three coats of full-strength polyurethane because with the diluted finish there's no need to rub down with steel wool or sandpaper between coats and dust and bubbles pose no problem.

A four-footed bowl

The four-footed apple wood bowl is about 6½" in diameter and 5" high. Its unique appearance arises in part from the deliberate use of green wood. The piece shown here shrank after turning, leaving the bowl ⅝" out of round.

Green wood turns easily, and peels off in one long strip. When working with green wood, either rough or out of shape, leave a 1" wall, and then let dry for six months, or turn the piece from start to finish in one session.

To hollow a piece like this with a wide bowl and narrow opening, a specially-shaped scraper is needed. A bowl gouge or standard scraper won't do the job. This piece may be hollowed with a handmade tool called an "internal boring bar." To hollow, bore a 1½" hole down to the depth wanted for the piece, and then work through that hole to hollow.

Continued on page 57

Skill-Building Projects 9

A Marquetry Mural

Veneer pieces make fascinating patterns for one-of-a-kind wall hangings!

by Bob Muller

Woodworkers will find this marquetry mural a creative challenge. Natural woods in thinly sliced veneers are cut by a craft knife and fret saw into jigsaw-like pieces to create tones and artistic impressions which compose the inlaid scenes of a wooden mural. We'll show you how to get started with the basic instructions below and the simple pattern included here. In short order, you'll be able to create a handsome wall hanging for the den or family room. The marquetry picture measures approximately 8¾" W x 11¼" L; overall dimensions of piece are approx. 12" W x 14½" L. Several methods can be used for cutting and inserting the wood veneer pieces into the picture. The double bevel method, using a birds-mouth cutting surface set at a 15 degree angle and a 12" fret saw, will be described here. Other methods are explained in detail in *The Modern Marquetry Handbook*, a publication of The Marquetry Society of America. See our Source of Supply list on page 70 for more information. Enjoy!

SUPPLIES

- Wood veneer pieces (see wood veneer key)
- Birds-mouth cutting surface
- 12" fret saw with no. 4, 5" jeweler blade
- ½" particle board
- Scotch tape
- Carbon paper
- Pencil
- Masking tape
- Toothpick
- White glue
- Craft knife with no. 11 blades
- Sandpaper
- Contact cement
- Selected finishing varnish
- Metal straightedge

INSTRUCTIONS

Finished size overall is approximately 12" W x 14½" L

The waster

Select a piece of inexpensive veneer (maple) and cut it 1" larger than the picture. This is called the waster. Scotch-tape the pattern onto the waster; using carbon paper, trace the full picture, with the exception of the geese. Trace the border of the picture to be used later in resetting the pattern. Remove the pattern.

Place a piece of avodire wood veneer under the waster in position for the sky. Using masking tape around the edges, tape the wood veneer to the waster.

Cutting the pattern

Attach the No. 4 jeweler blade to one end of the fret saw and thread through the hole. Secure the blade with tension to the other end of the saw, with the handle beneath the picture. Following the traced lines, cut out the entire sky, turning the work in a clockwise direction. When the wood is cut, release one end of the saw blade, and remove the cut piece. Discard the waster piece. Using a toothpick, spread some white glue along the edges of the cut piece, and insert it into the opening from the back. Hold in place using several pieces of masking tape until the glue is set.

Following the steps above, cut and insert all of the remaining pieces of the traced pattern. The inserted wood veneers should be positioned before cutting to get the best effect from grain and color.

Reposition the pattern on the border lines, and trace the geese. Remove the pattern, and cut in the individual wood veneers for the geese. The eyes of the geese are created by using a craft knife to cut a small hole in the veneer; a little glue mixed with the wood dust makes a paste that helps suggest the goose's eye. At this point, all pieces have been cut in and the only remaining waster is outside the border.

Using a craft knife and a metal straight edge, trim the waster from the completed picture, being sure to retain the squared size.

Marquetry Pattern →

Mounting the marquetry

Cut the ½" particle board ⅛" smaller in width and length than the completed picture. Using contact cement, veneer the back and sides of the particle board. After removing all masking tape from the back of the picture again, use contact cement to mount the picture on the particle board.

Sanding

Sand the picture by hand to a satin smoothness, being careful not to sand through the very thin veneers.

Finishing

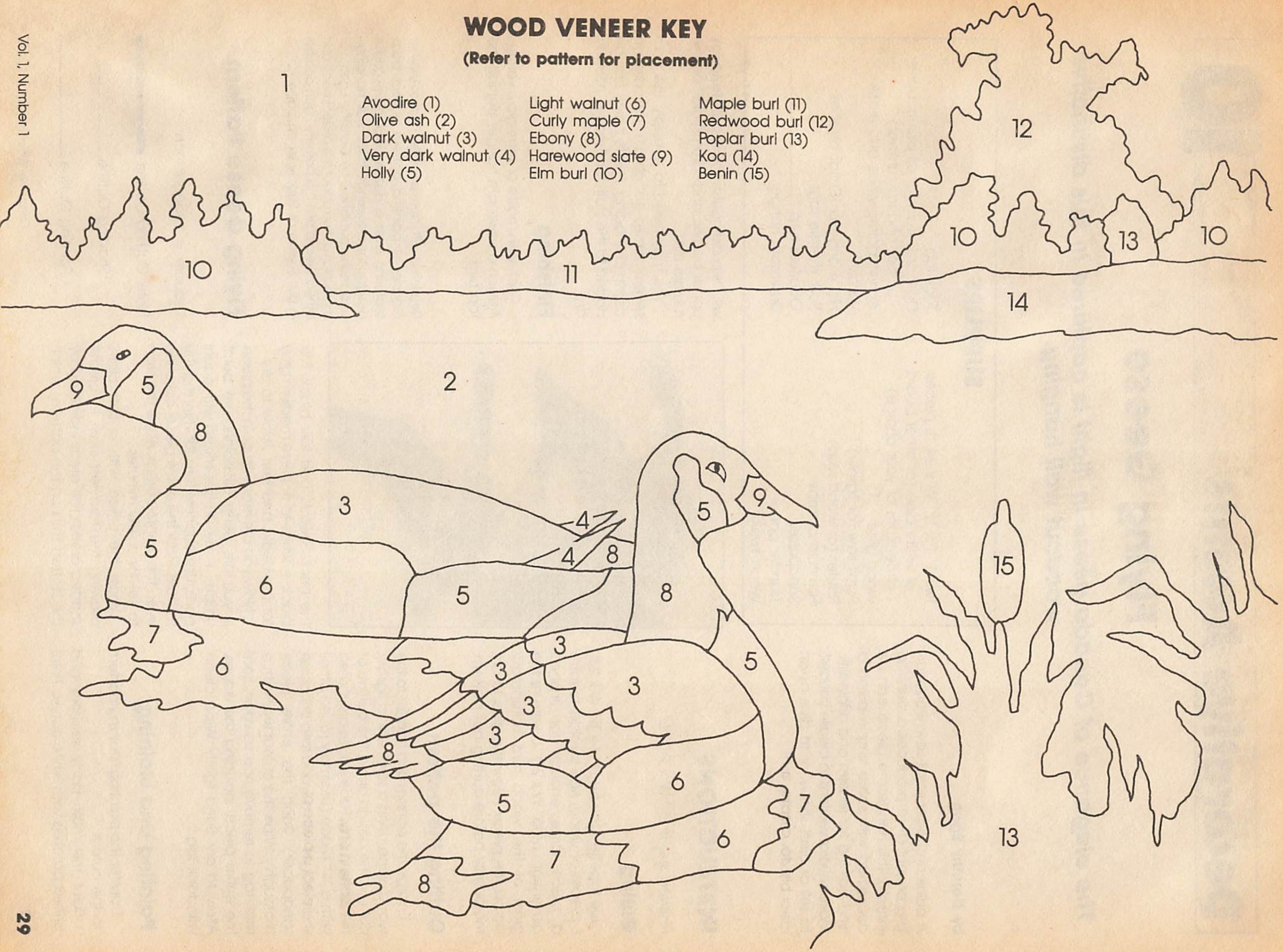
With a carefully selected finish, the beauty of the picture is enhanced and the wood veneers are preserved. The method and materials used in finishing depend on the taste of the artist.

For more information about how to join The Marquetry Society of America and where to obtain all the marquetry materials for this project, as well as *The Modern Marquetry Handbook* and kit projects, please see the Constantine's Catalog address in our Source of Supply list on page 70.

WOOD VENEER KEY

(Refer to pattern for placement)

Avodire (1)
Olive ash (2)
Dark walnut (3)
Very dark walnut (4)
Holly (5)
Light walnut (6)
Curly maple (7)
Ebony (8)
Harewood slate (9)
Elm burl (10)
Maple burl (11)
Redwood burl (12)
Poplar burl (13)
Koa (14)
Benin (15)



Flying Geese

The elegance of Canada geese in flight is captured in this distinctive woodcut wall hanging.

by Dorothy Egan

A quick and easy scroll saw woodcutting project (that produces a stunning effect!), this handsome piece can be decorated with some simple painting and staining for realism and originality. Make several versions to please yourself, to sell at craft shows, or to give as an ideal housewarming gift!

SUPPLIES

Two 1" T x 12" W x 24" L pieces of white pine (or other board dimensions of your choice)
Wood glue
Scroll saw (or jigsaw)
Router (or wood rasp)
Furniture clamps
Sandpaper
Transfer paper
Wood sealer
Tack rag
Dark oak stain (or oil paints: burnt umber and raw umber)
Acrylic paints: white and black
Varnish
No. 4 and No. 10 flat brushes
Soft, lint-free rags
Odorless turp
Sawtooth hanger

INSTRUCTIONS

Finished size is 16" W x 20" L.

Gluing

Glue together the two 1" T x 12" W x 24" L pieces of wood, side by side, to form a piece large enough for finished dimensions of 16" W x 20" L. Be sure the grain of the wood runs horizontally across the piece. Allow the glue to dry thoroughly before cutting out pattern.

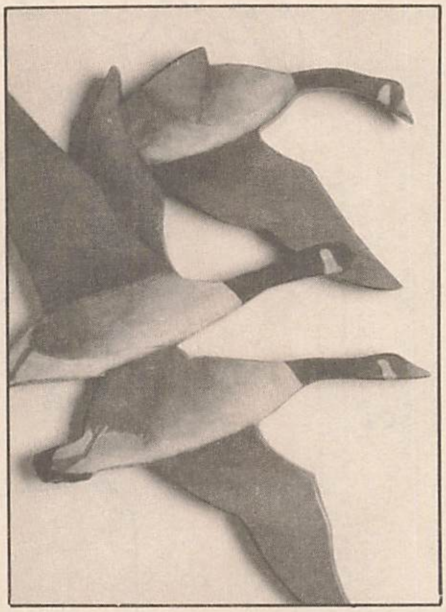
Cutting the pattern

Enlarge the pattern and transfer to the wood piece. Using a scroll saw or jigsaw, cut out the design along the outline of the pattern only. Face edges are routed with a ¼" blade (or simply round off all sharp edges with a wood rasp or coarse sandpaper). Sand the entire piece thoroughly. Wipe the cutout well with a tack rag to remove fine sawdust. Seal the entire piece, including the edges. Allow to dry. Sand lightly. Wipe clean with tack rag.

Painting and staining

Transfer the painting/staining pattern to the cutout.

Paint the main body sections and cheek patches with white acrylic. Paint the necks, heads, and tails black. Mix black + white to achieve medium gray for the beaks and feet. Allow to dry.



Now you are ready to stain the piece. If you are using oil paints, use burnt umber + raw umber, mixed with equal parts. Use odorless turp for thinning the mixture. Stain the entire piece, covering even the painted areas. Allow the stain to set for a few minutes.

Wipe the piece with a soft cloth, allowing the heaviest stain to create shaded areas (the areas indicated by the dotted lines on the pattern) which will help distinguish the separate wings, upper bodies, and "drumsticks" on the middle bird.

You may need to re-apply the stain several times to obtain the desired depth of shading. A little black can be added to the stain for shading. Allow to dry.

Finishing

Finish with matte or semi-gloss varnish. Attach a sawtooth hanger behind the top bird.

Reprinted with permission from *Take Another Gander,* a painting pattern project book featuring over a dozen decorative goose designs for bookends, trays, wall hangings, and more, published by Dorothy Egan. For more information about this project book and others, please see the Dorothy Egan address in our Source of Supply list on page 70.

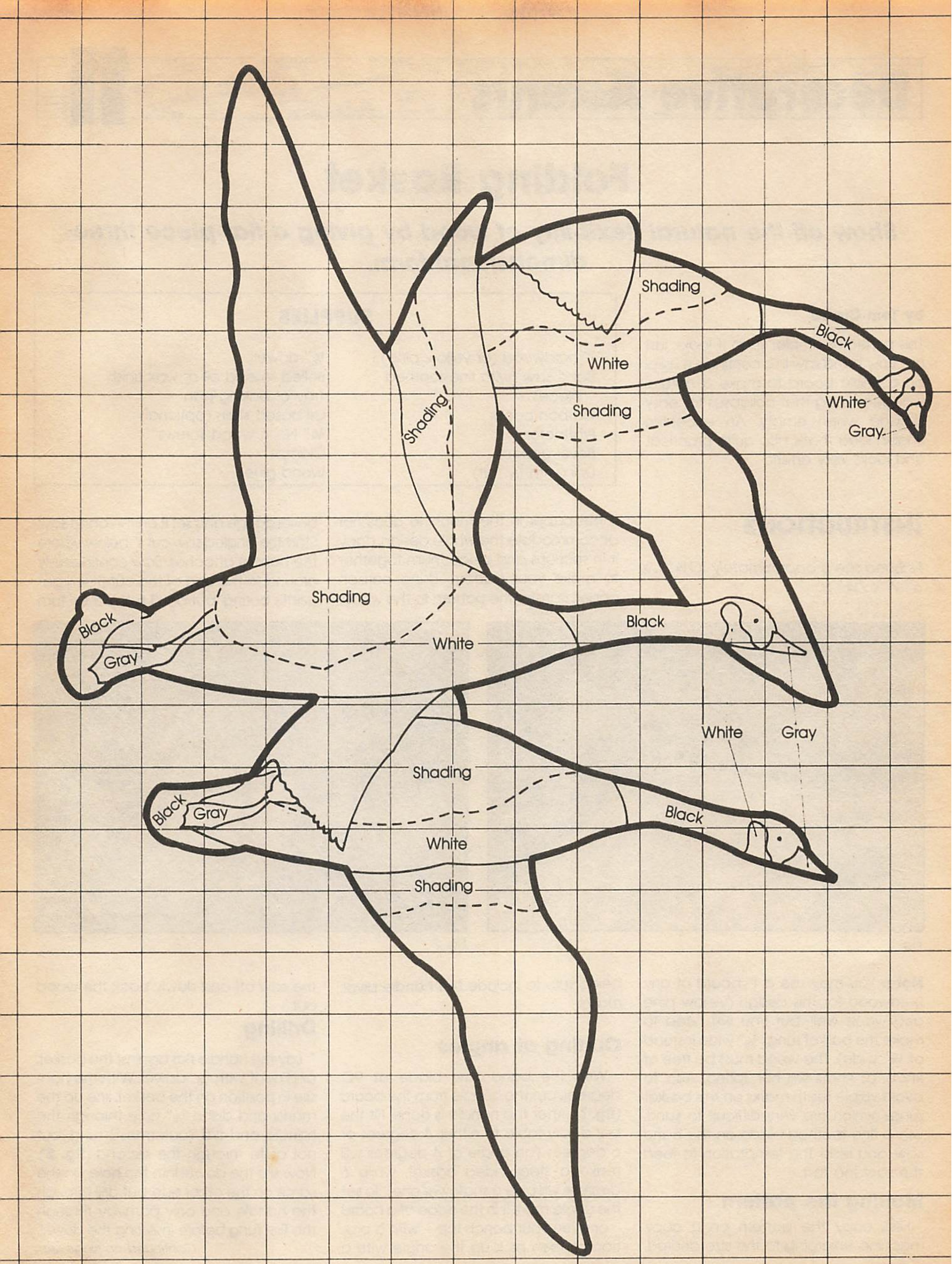
Flying Geese Pattern

1 square = 1 square inch

Note: Cutting Outline ━━━━━━

Shading Outline - - - - - - - - - -

Painting Outline ————————


Shading
Black
White
White
Gray
Shading
Shading
Shading
Black
Gray
White
Black
White
Gray
Shading
Black
Gray
Black
White
Shading

Folding Basket

Show off the natural flexibility of wood by giving a flat piece three-dimensional form.

by Tom Crabb

This project is simpler than it looks: just use your band saw in a continuous spiral on a single board to make a natural wooden spring that collapses for easy storage when empty. An eccentric English idea that's also quite practical, and looks very artistic.

SUPPLIES

- 1" hardwood (or yellow pine)
- Band saw (with fine-toothed blade)
- Carbon paper
- Protractor
- Bevel gauge
- Drill (with 1/8" bit)
- 1/8" dowels
- Boiled linseed oil or wax finish
- Tray or baking pan
- Oil-based stain (optional)
- 3/4" No. 6 wood screws
- Clamps
- Wood glue

INSTRUCTIONS

Finished size is approximately 10¼" L x 6" W x 7¼" H.

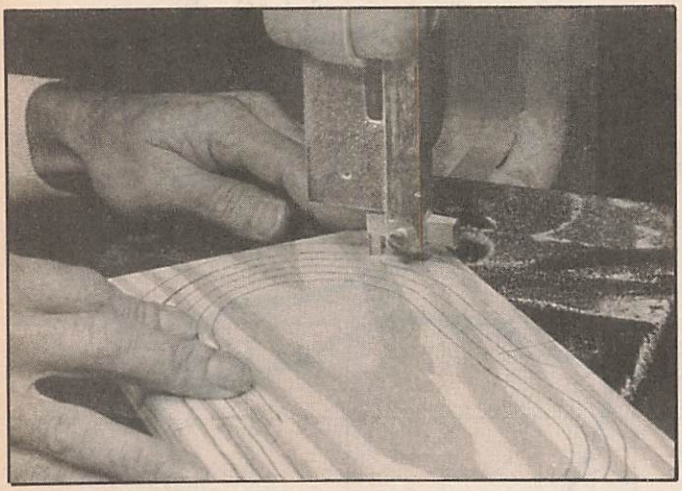


Fig. 1

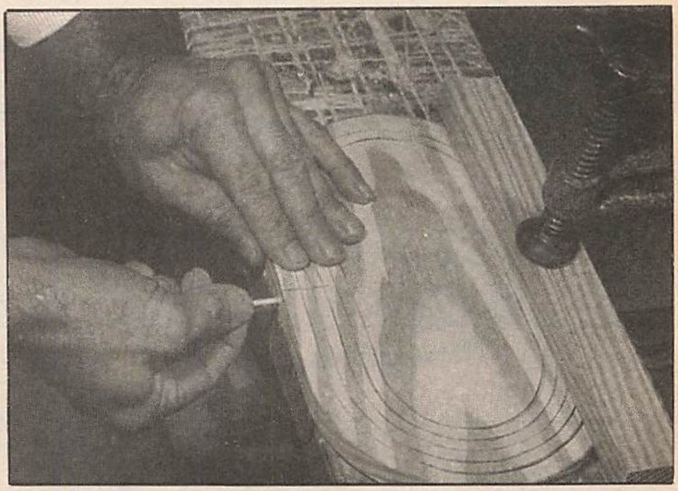


Fig. 2

Note: You may use a 1" board of any hardwood for this design (yellow pine also works well, but you will need to make the basket rungs 3/8" wide instead of ¼" wide). The wood must be free of knots, as knots will not spring. Also, to avoid visible teeth marks on the basket rungs, which are very difficult to sand, use a fine-toothed blade on the band saw, and resist the temptation to feed the saw too fast.

Making the pattern

First, copy the pattern on a copy machine, enlarging to the size desired. If the paper in the machine does not accommodate the whole design, copy it in sections and piece them together to make your pattern. Using carbon paper, transfer the pattern to the wood, being sure to include the handle pivot marks.

Cutting at angles

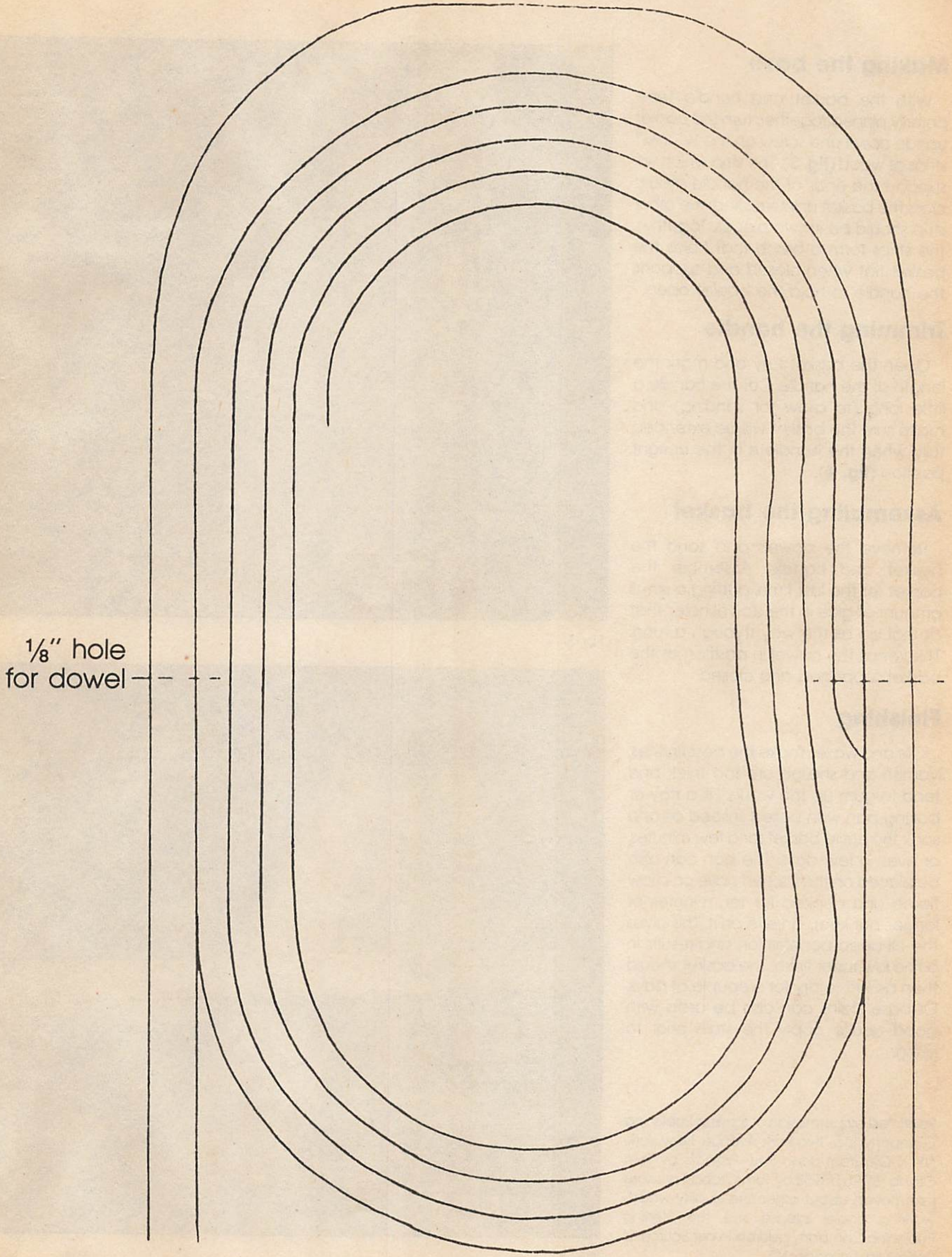
With the band saw blade at 90 degrees, cut the handle from the board (**fig. 1**). After the handle is done, tilt the band saw table to either 4 degrees or 6 degrees (an angle of 4 degrees will make a steep-sided basket, while 6 degrees will give a shallower one). To set the angle, mark it in the edge of a board – or even your bench top – with a protractor, then pick up the angle with a bevel gauge and set it on the band saw. Start the angled saw cut 1" below where the handle attaches. Saw continuously around to the end of the cut (it will get a little boring, but don't rush), then turn the saw off and slowly back the wood out.

Drilling

Lay the handle flat against the basket, and pin it with 1/8" dowel. With the handle in position on the basket, line up the marks and drill a 1/8" hole through the handle and first (outermost) rung, but not quite through the second (**fig. 2**). Now slip the dowel into the hole. Do the same on the other side, but drill through the handle and only partway through the first rung before inserting the dowel.

Continued on page 34

Folding Basket Pattern



Continued from page 32

Making the base

With the basket and handle temporarily pinned together, turn the basket upside down and screw on the ¼" x ¾" strips of wood (**fig. 3**). The strip which will support the ends of the handle should cross the basket uninterrupted; the other strip should be in two pieces. Together, the strips form a brace that holds the basket flat when closed and supports the handle to hold the basket open.

Trimming the handle

Open the basket fully and mark the length of the handle. Cut the handle a little long (to allow for sanding) and make sure the basket will be extended fully when the handle is in the upright position (**fig. 4**).

Assembling the basket

Remove the dowels and sand the basket and handle. Assemble the basket for the last time, putting a small amount of glue in the dowel holes that do not go all the way through a rung. This keeps the dowel in position as the basket is opened and closed.

Finishing

Oils and waxes make the best finishes. Varnish and shellac are too thick and tend to gum up the works. Fill a tray or baking pan with boiled linseed oil and soak the entire basket for a few minutes, or even a few days. The pan can also be placed on the kitchen stove on a low flame and cooked for ten minutes or longer, but keep an eye on it. This gives the oil deep penetration and results in a fine low-luster finish. The basket should then be left to dry for a couple of days. Oil-base stains can also be used with good results: apply the stain prior to oiling.

Reprinted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *Band Saw Projects* by Tom Crabb ($9.95) ©1988 by Tom Crabb. For more information about other fine quality woodworking books, please see the Sterling Publishing Company address in our Source of Supply list on page 70.

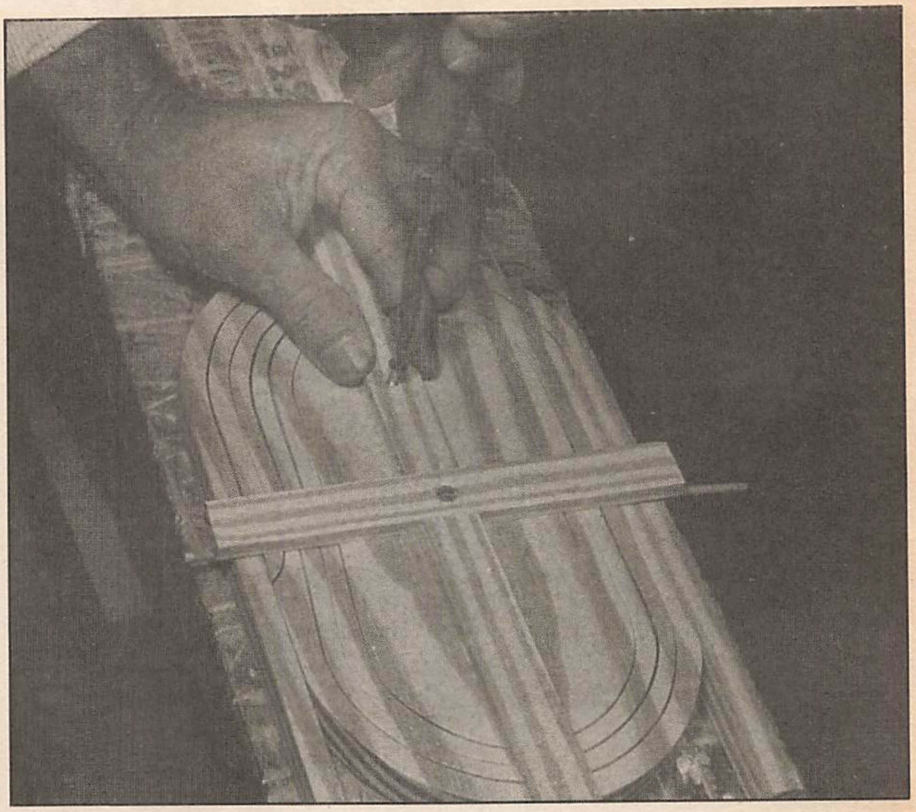


Fig. 3

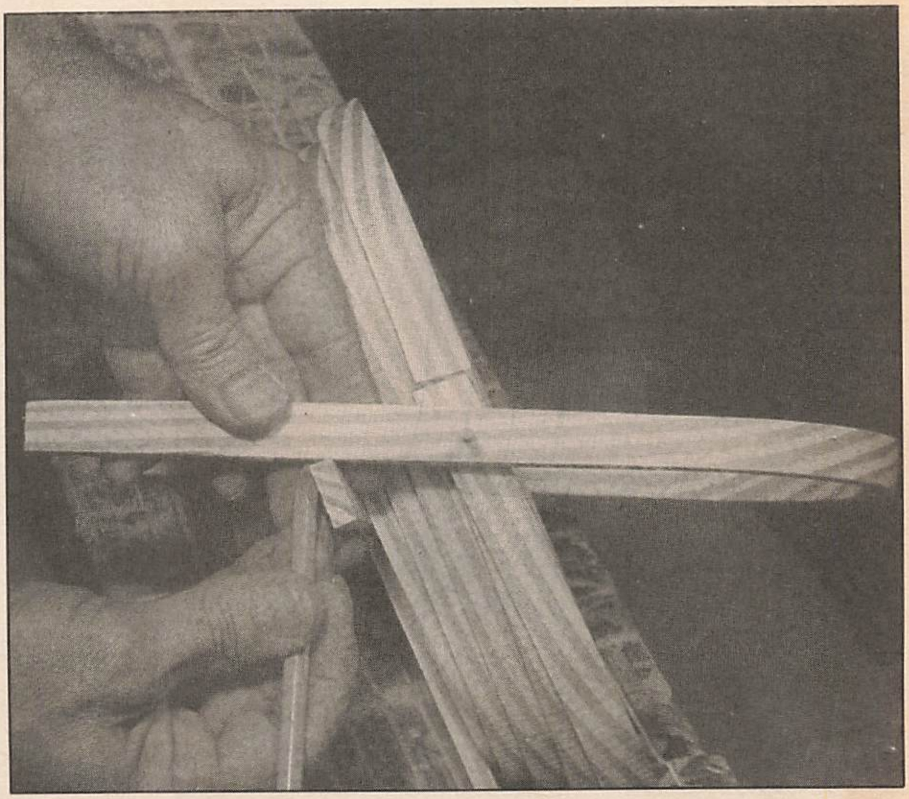
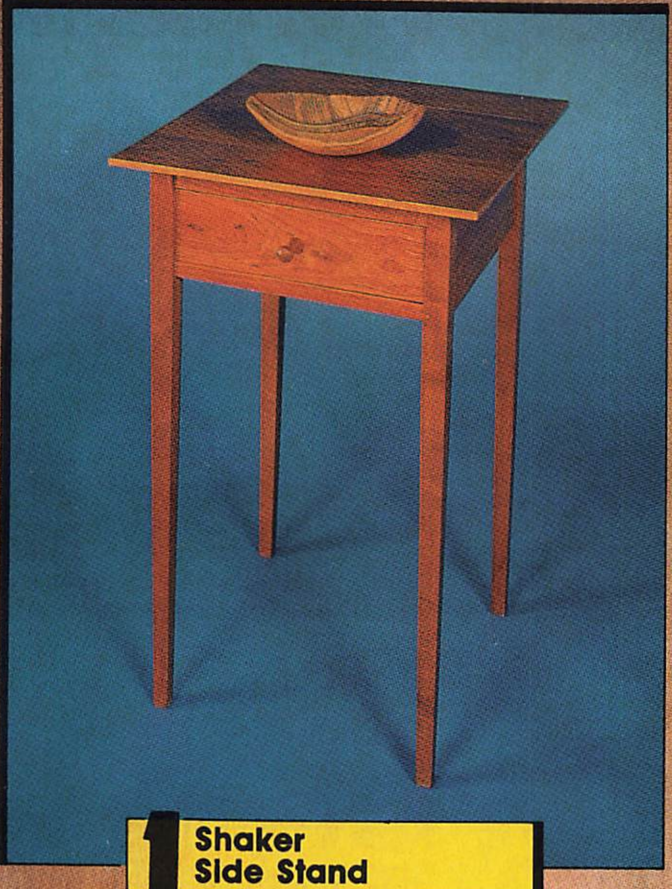
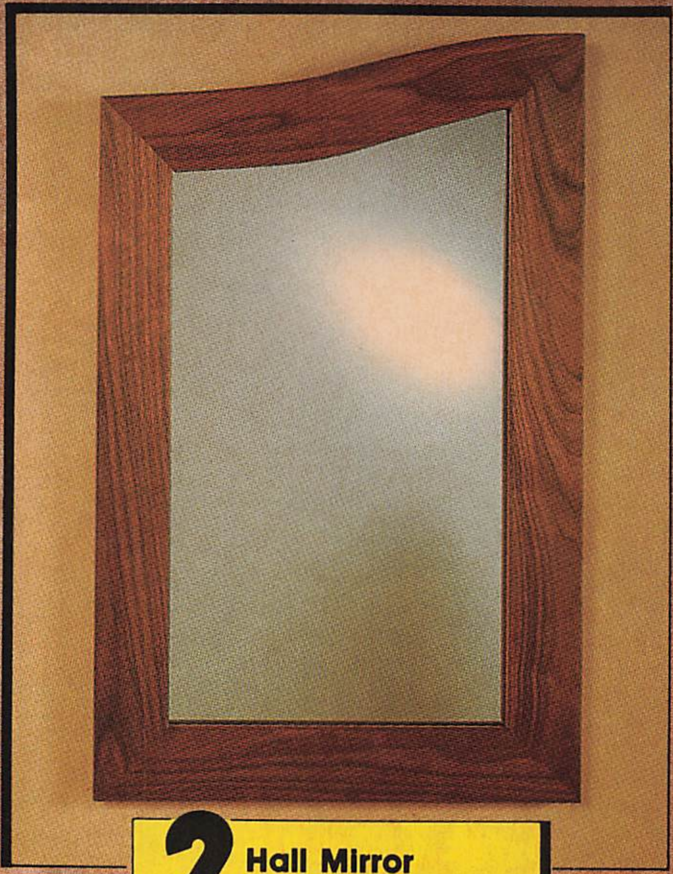


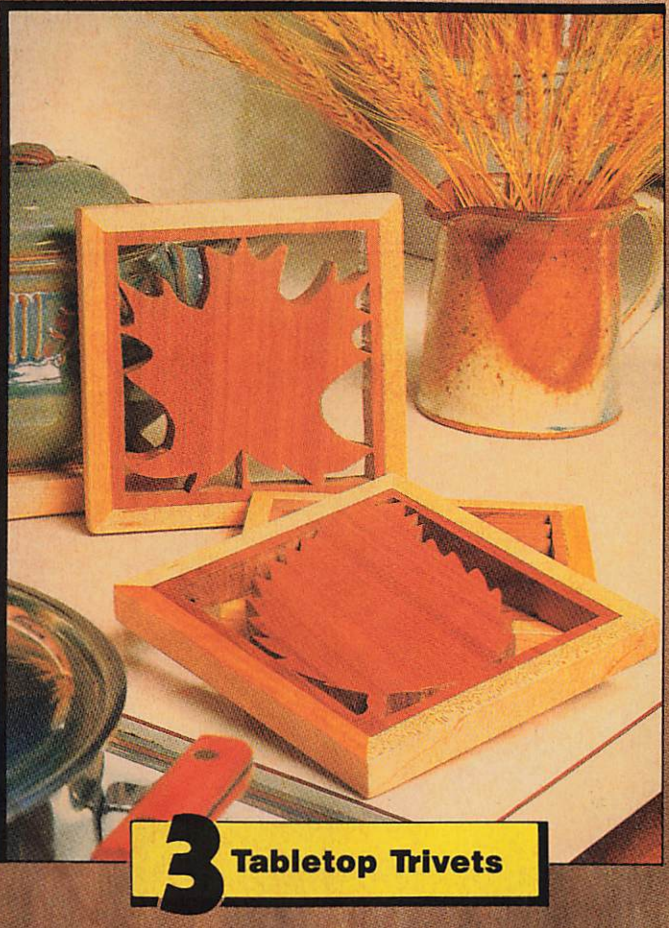
Fig. 4



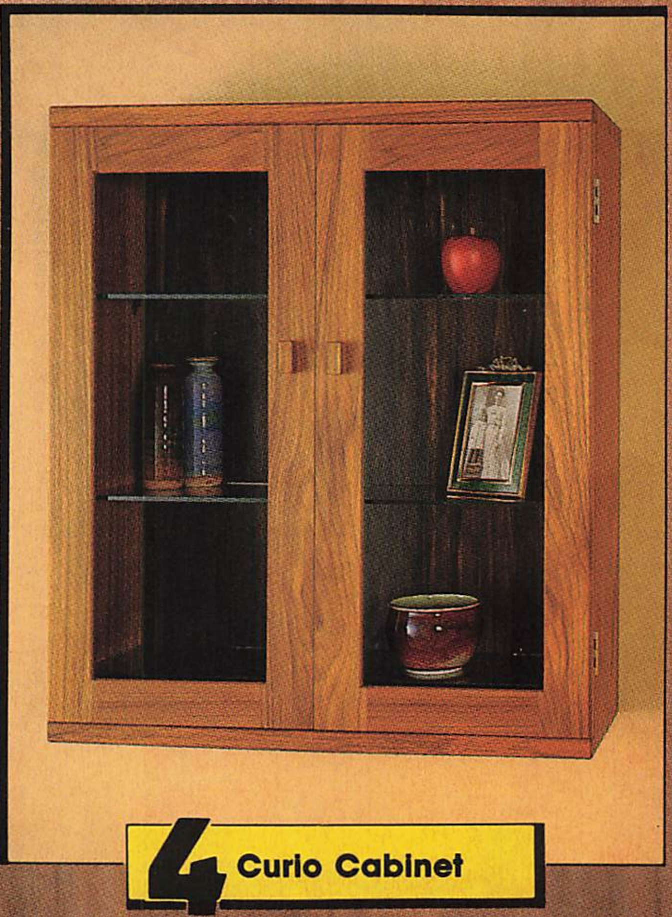
1 Shaker Side Stand



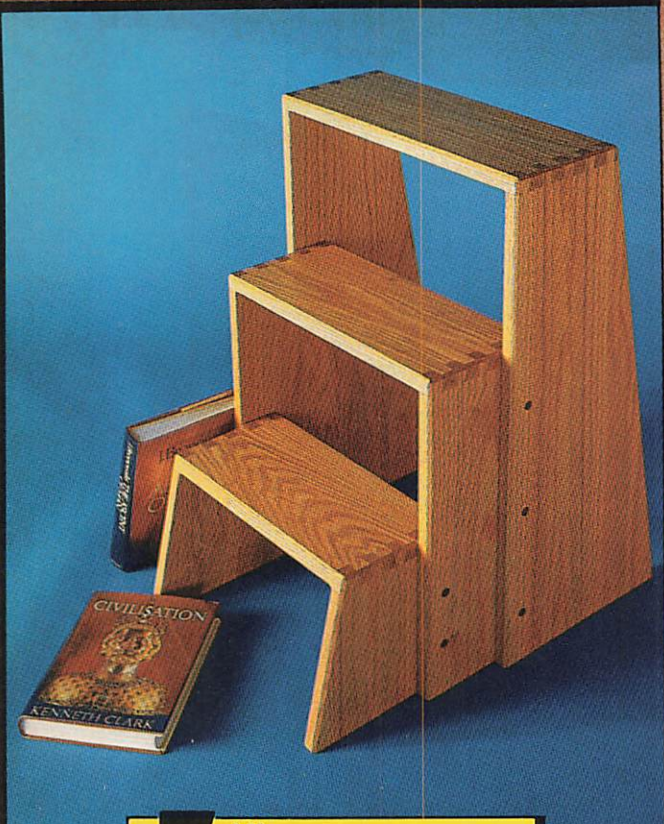
2 Hall Mirror



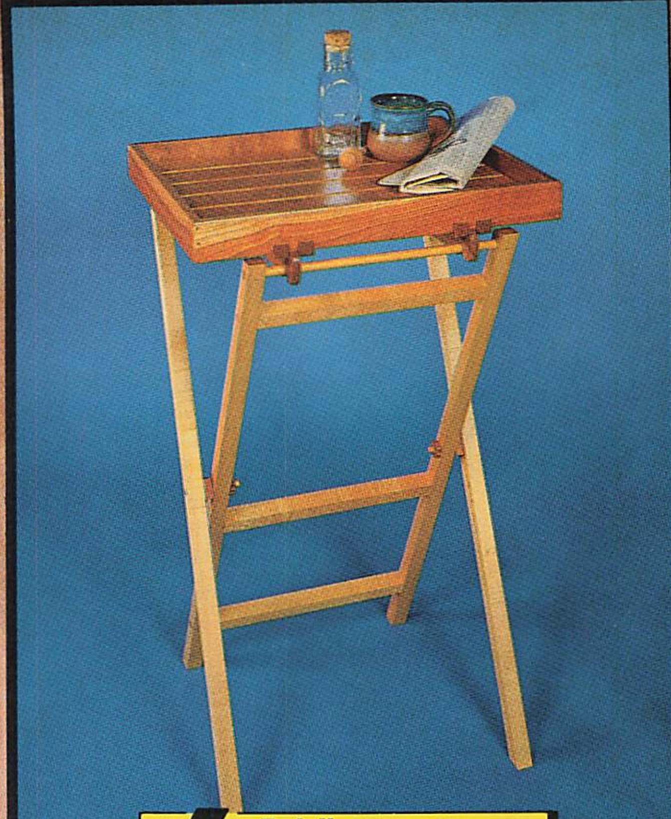
3 Tabletop Trivets



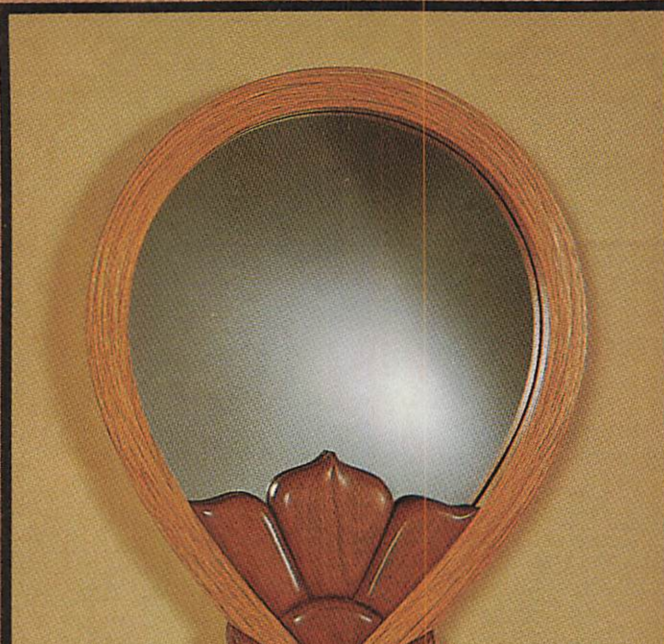
4 Curio Cabinet



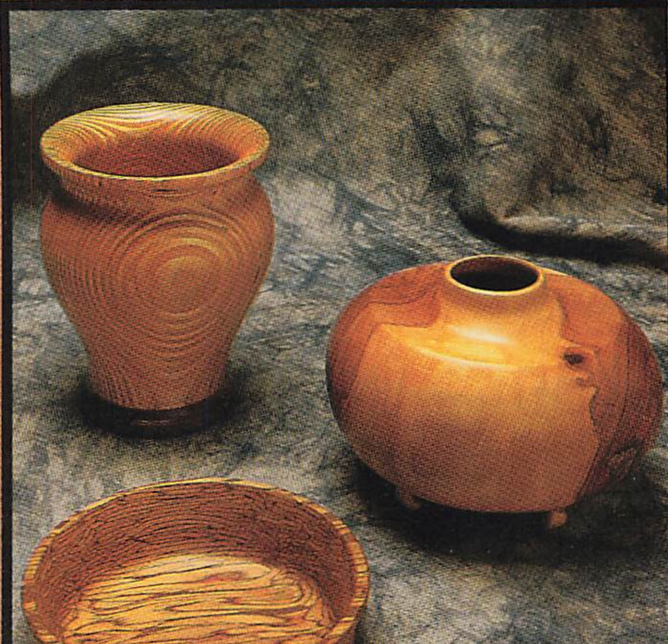
5 Library Step Stool



6 Folding Tray Table

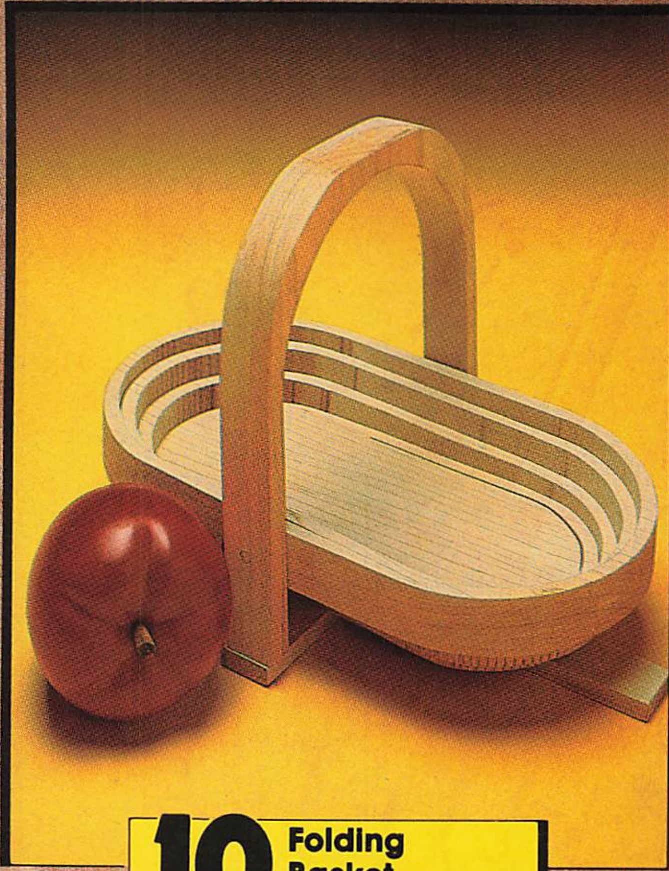


7 Bentwood Mirror

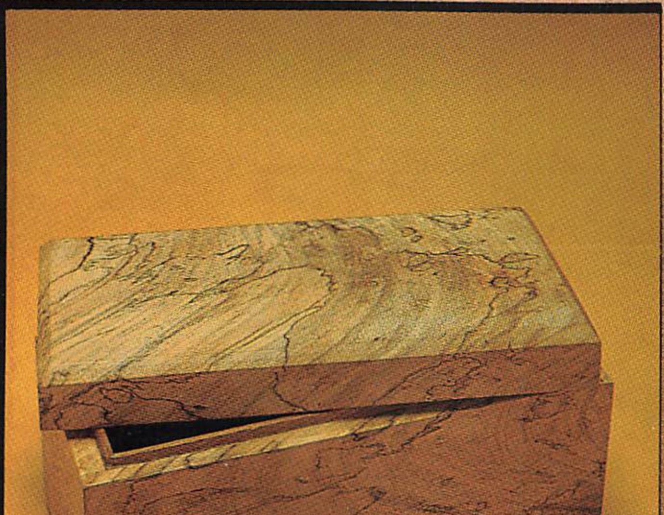


8 Turned Bowls

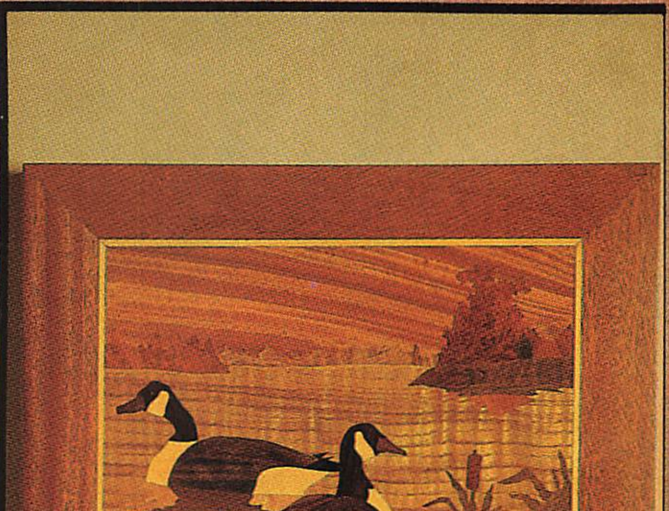
9 Flying Geese



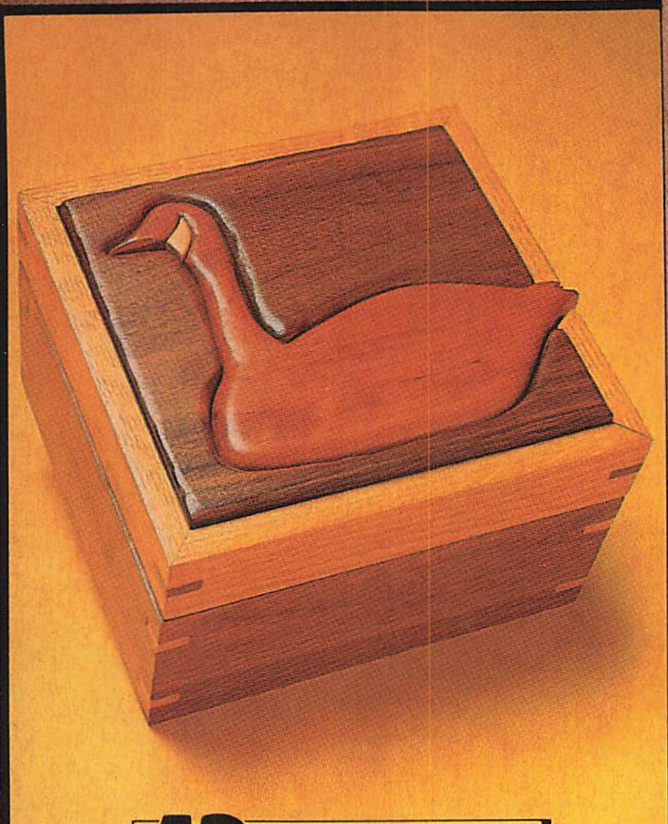
10 Folding Basket



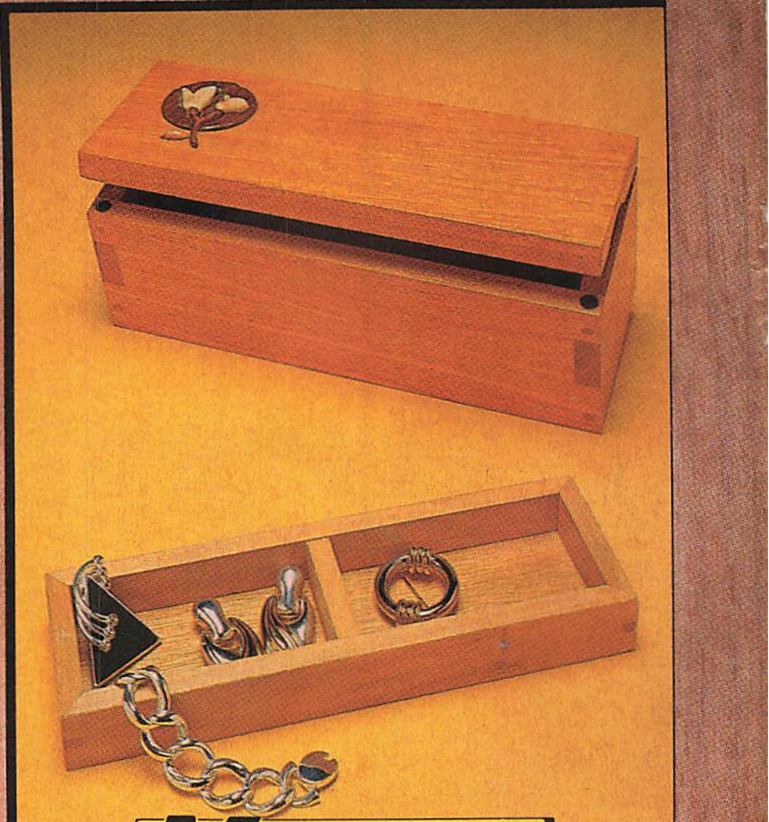
11 Marble Box



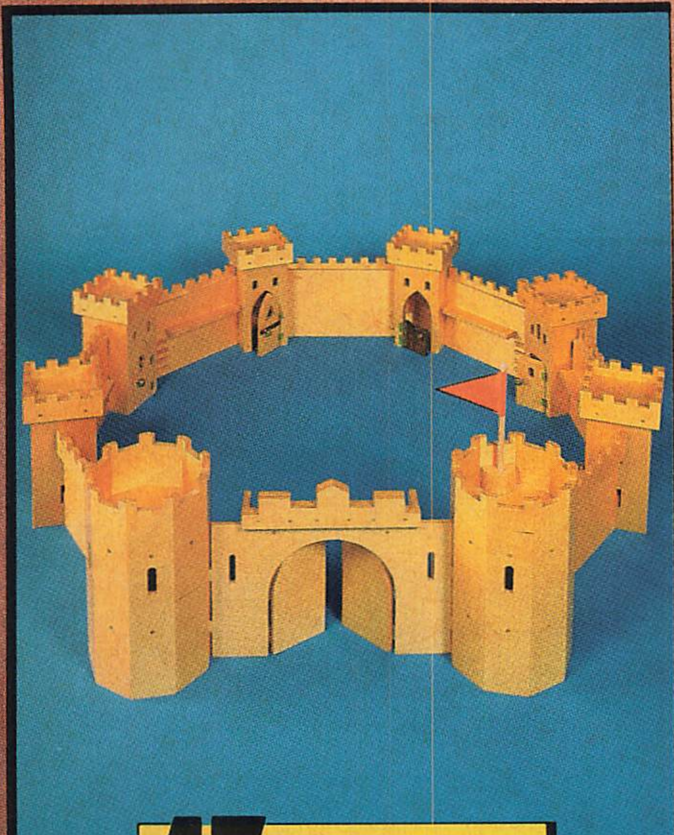
12 Marquetry Mural



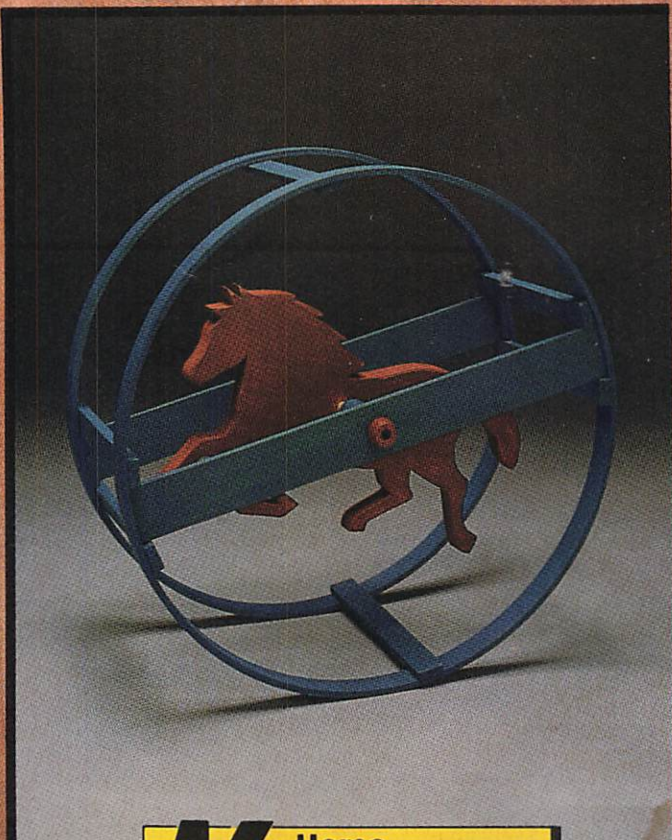
13 Goose Inlay Box



14 Jewelry Box



15 Fantasy Castle



16 Horse-In-A-Hoop

Decorative Accents 12

Absolutely *Marbleous* Boxes!

Swirling lines of attractive elm make these boxes marble-like beauties.

by Tom Crabb

Wood taken from tree crotches usually has attractive, swirling designs. You can save such a piece from a dead elm tree, and after much sawing, hacking, and sanding have a beautiful 8" L x 5" H x 4¾" W block of fungus-stained elm. The black lines are the fungus stains, which make the wood look like marble. As this wood is not easy to come by, you shouldn't waste any of it. Here's a plan to make three marble boxes from one block of wood.

SUPPLIES

- Band saw (¼" blade)
- 8" L x 5" H x 4¾" W block of elm
- Linseed oil
- Drill (with ⅜" bit)
- Sandpaper
- Titebond wood glue
- Hinges
- Johnson's floor wax
- Varnish
- Clamps

INSTRUCTIONS

Finished sizes of boxes are approximately 8" L x 5" H x 4¾" W for box 1, 7" L x 4" H x 3⅜" W for box 2, and 5" L x 3" H x 3" W for box 3.

Working with the patterns

First, enlarge the patterns. The first box, featuring a hinged lid (**fig. 1**), is exactly the size of the original block; see Box 1, pattern A.

Making the first box

Saw ½" off the top, front, and back, in that order. Before cutting out the inside space, drill two holes ⅜" in diameter in the bottom corners so you can first saw to the holes, then turn the blade 90 degrees in the hole, and saw on. This saves wood and adds some nice detail on the remaining block.

Glue the sides and top back on the original block, then round the front edge of the lid, and cut a lifting tab into it. Sand the box well, then cut it open with the band-saw table set at the angle shown in Box 1, pattern B. Add hinges and glue a lip to the inside of the box.

Make the second box out of the first box

After making the first box, you are left with a block now measuring 7" L x 4" H

Continued on page 40

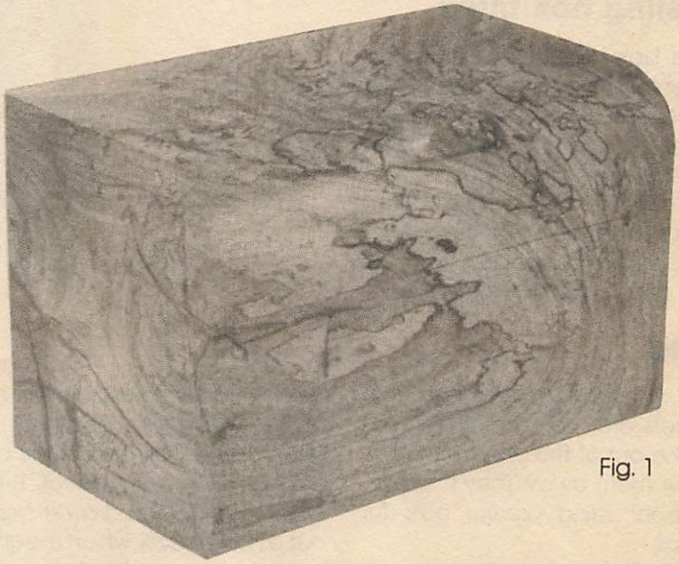


Fig. 1

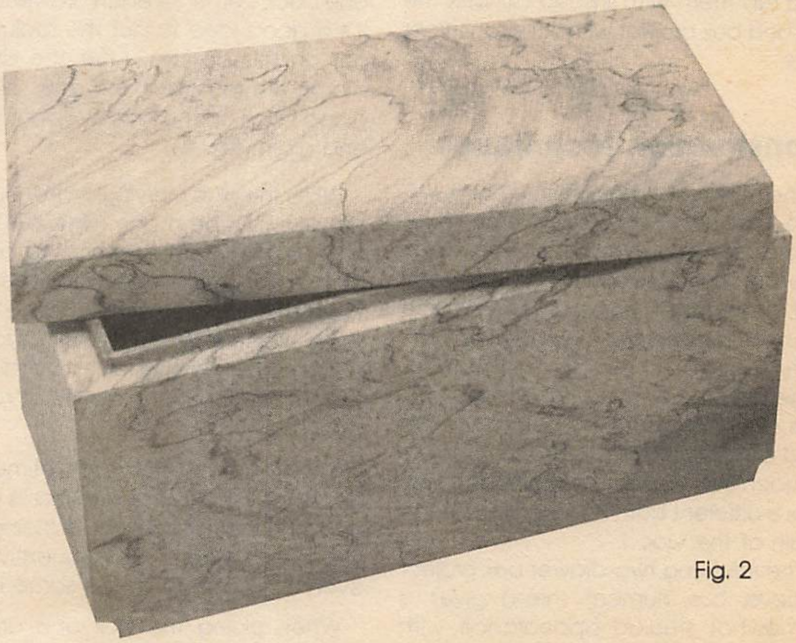


Fig. 2

Marble Boxes

Continued from page 39

x 3⅜" W. The second box project (**fig. 2**) is similar to the first, but lacks hinges; see Box 2 pattern. Cut open the lid squarely–instead of at an angle–and glue the lip to the inside on all four sides. Sand a ¼" chamfer around the lid of the box.

Cut out the inside space with 1¼" diameter corners, which form the top and bottom profile of the third box project (**fig. 3**). Use a 1¼" diameter because that is the minimum diameter a ¼" blade will cut.

Completing box three

The third box project is a standard two-drawer box, but first cut the profile shape, then saw ¼" off both sides; see Box 3 pattern. Cut out the drawer blocks and glue the sides back. Cut 3/16" off both sides of the drawer blocks, cut out the drawer spaces, and glue the drawer sides back. Make drawer pulls from the wood cut out of the drawer space.

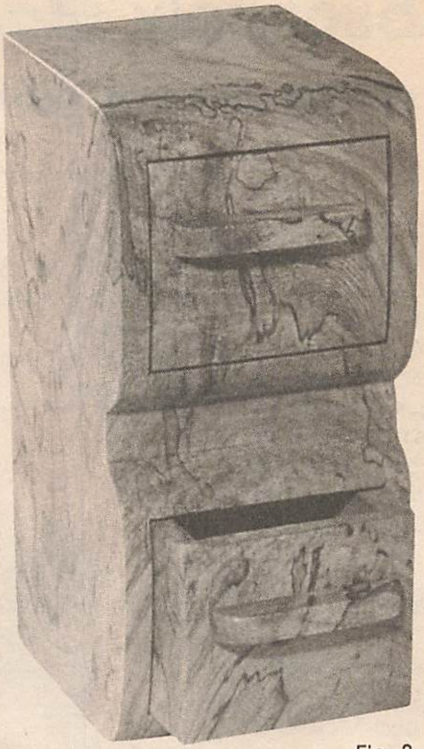


Fig. 3

Finishing

The only wood pieces remaining from your projects are the two little pieces which came out of the drawer spaces. Don't throw them away. They make interesting contrasting drawer pulls for other boxes.

Varnish the first and third box projects and rub them with linseed oil. Wax the second box project with Johnson's floor wax.

Construction techniques

The making of a band-saw box is unique among woodworking techniques because you begin with a solid piece of wood that you saw apart and then put back together. Since each piece sawn off is glued back in its original position, there is no fussing to fit pieces together or to achieve tight-fitting joints. This allows a continuity of grain inside and out which adds to the uniqueness of each box. As a result, each band-saw box is different both in design and in the grain of the wood.

The following two-drawer box project (above, box number three) gives a somewhat studied appearance with square-cornered drawers and straight lines. Begin by sawing ¼" off each side of the block of wood, using a rip fence (**fig. 4**). Then lay the block on its side and draw the shape of the drawer blocks on it. Each drawer must be cut out as one piece, which means a radius must be turned with the saw blade on one back corner of each drawer block. It's a good idea to put the radius corner on the bottom. After the drawer blocks are removed, the sides can be glued back on the box, by lining up the end grain (**fig. 5**).

While the glue is drying on the box, the drawers can be made (**figs. 6-8**). Saw 3/16 - ¼" off both sides of the drawer blocks, using a rip fence. On the side of the drawer block, draw the shape of the inside space. With the drawer space cut out, glue the sides back on by lining up the end grain, sand them, and add drawer pulls.

For this type of box it sometimes is a good idea to put the drawers in place and give the front a good sanding with the belt sander. This frequently gets everything settled at the same level.

When gluing the box and drawers back together, be sure to match the end grain to make sure each piece is in its correct position.

Scaling up patterns

To scale up a drawing from ½" squares to ¾" squares, first take a piece of white poster board, 11" x 14", and draw ¾" squares all over it with a fine black soft-tip pen. Now lay a sheet of paper over the poster board and tape it down at the corners (you can see the squares through the paper). The best way to do the drawing is to make a short mark everywhere a line from the drawing crosses a line of a square. After all the lines have been marked, all that's left to do is fill in the blanks. When your drawing is finished, unfasten the corners carefully and put away the poster board for later use.

Reprinted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016, from *Making Wood Boxes With A Band Saw* by Tom Crabb ($9.95). ©1985 by Tom Crabb. For more information about this and other fine quality woodworking project books, please see the Sterling Publishing Company address in our Souce of Supply list on page 70.

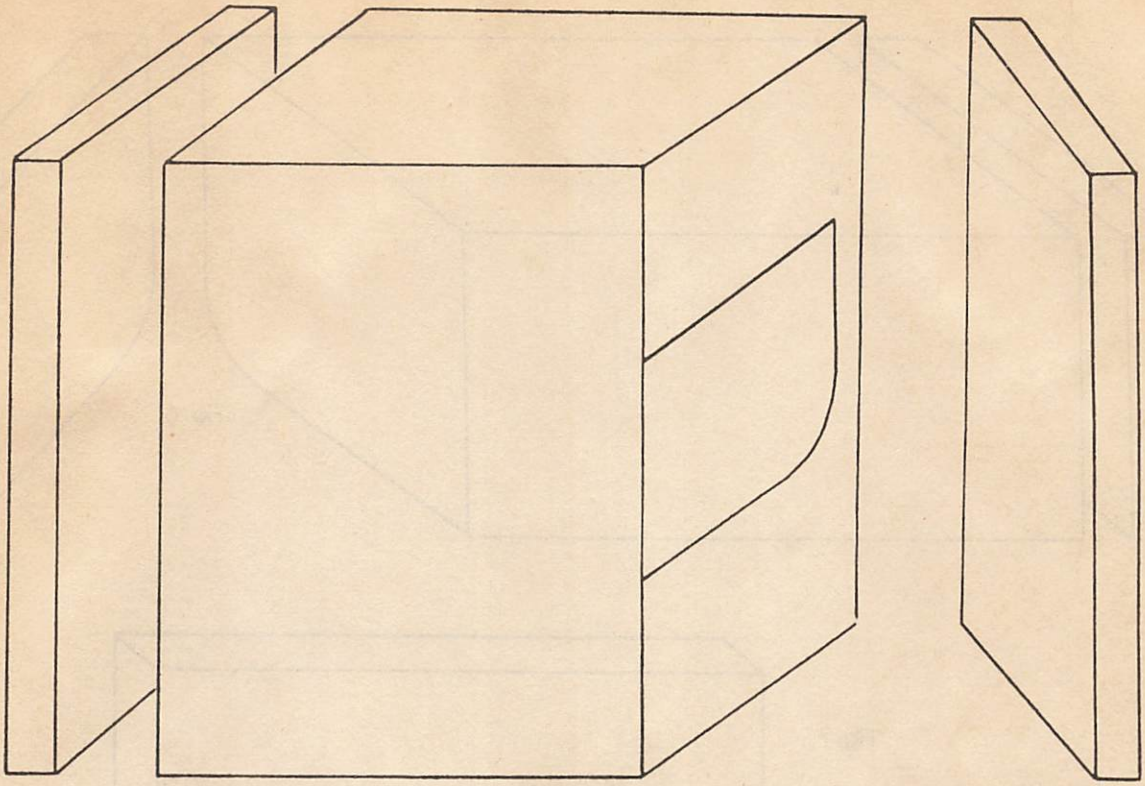


Fig. 4

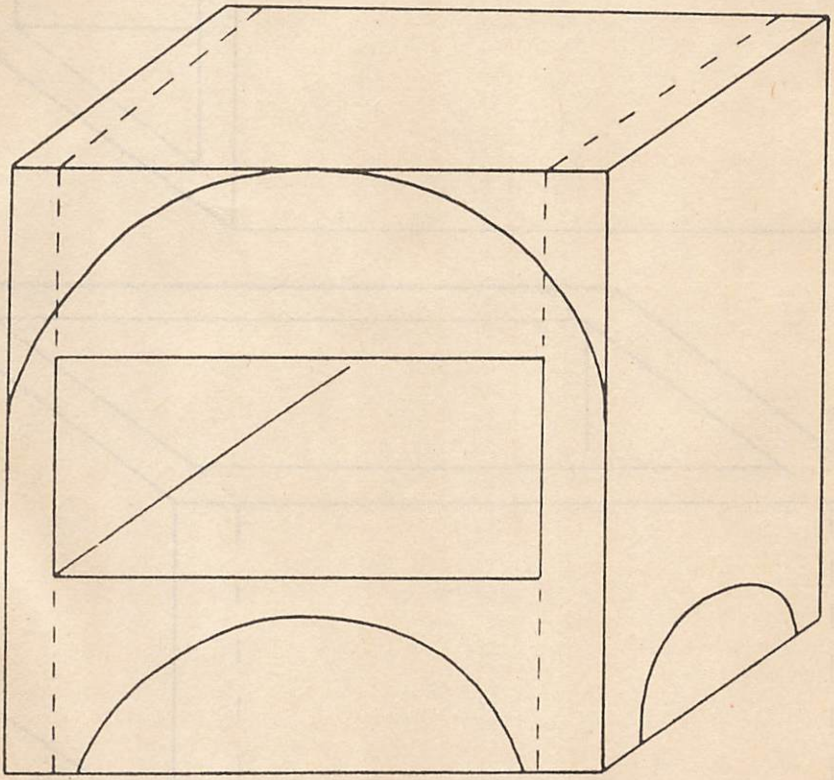


Fig. 5

Continued on page 42

Marble boxes

Continued from page 41

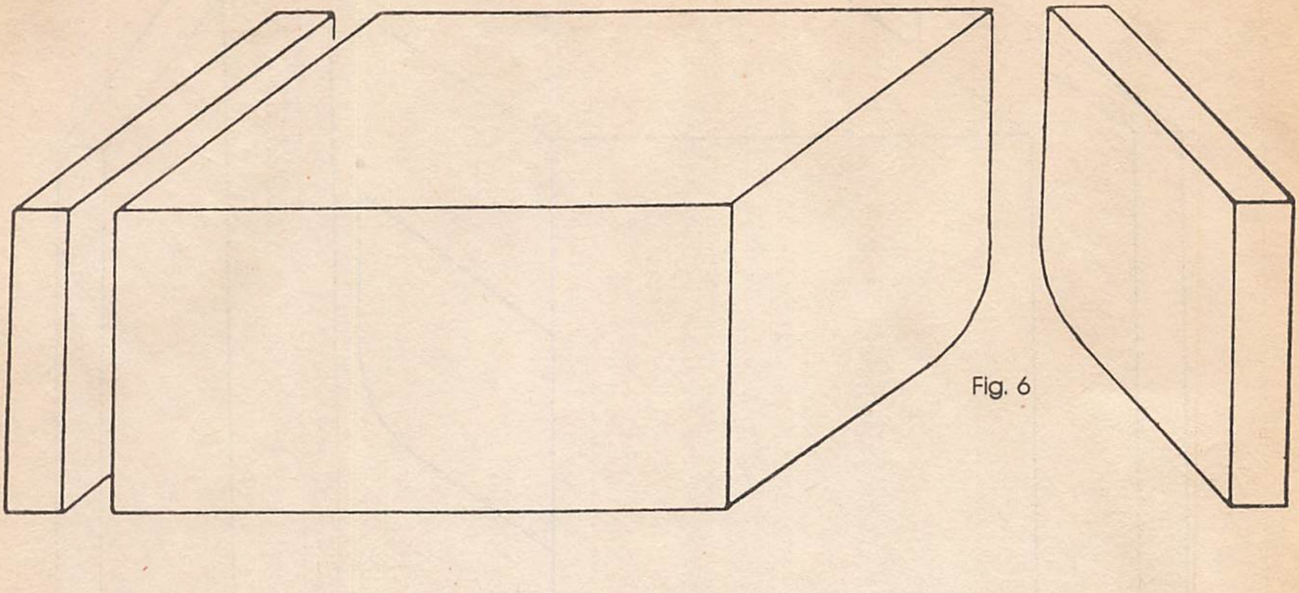


Fig. 6

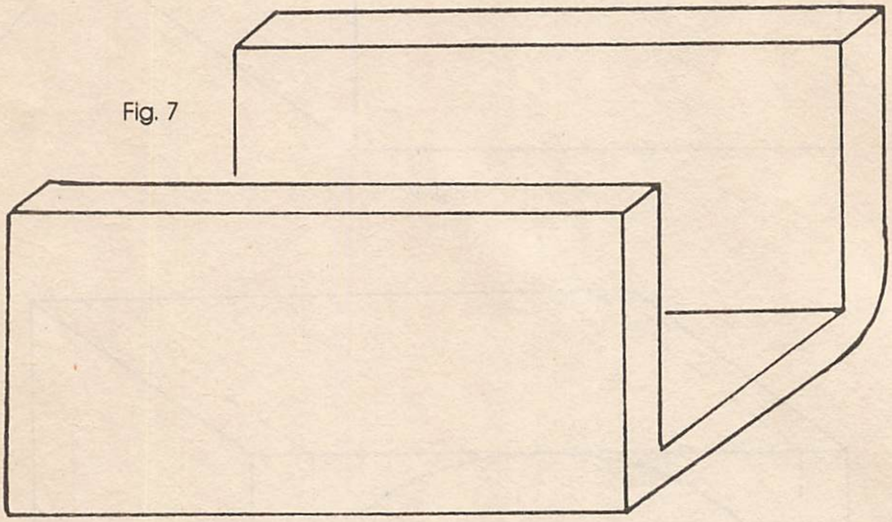


Fig. 7

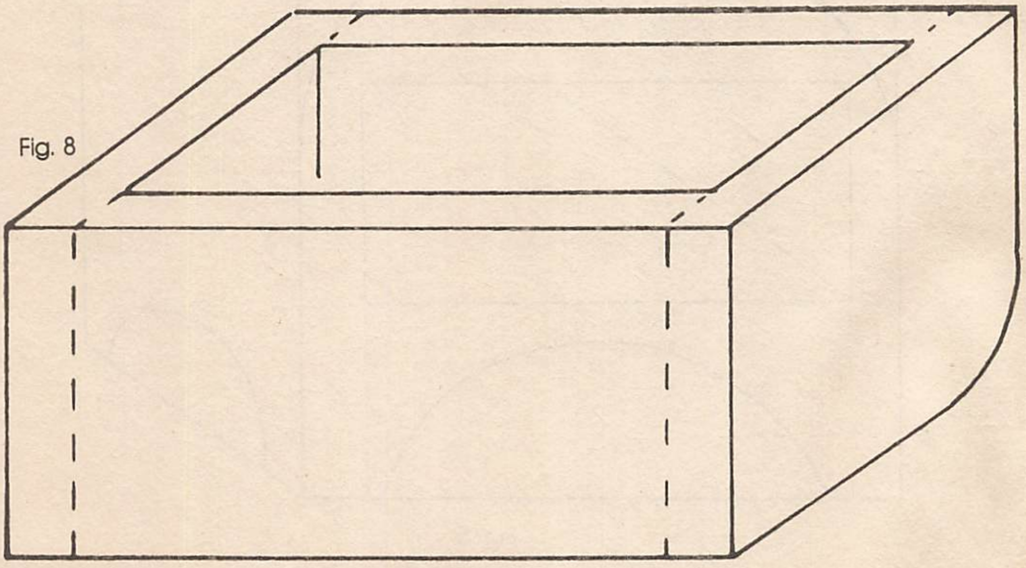
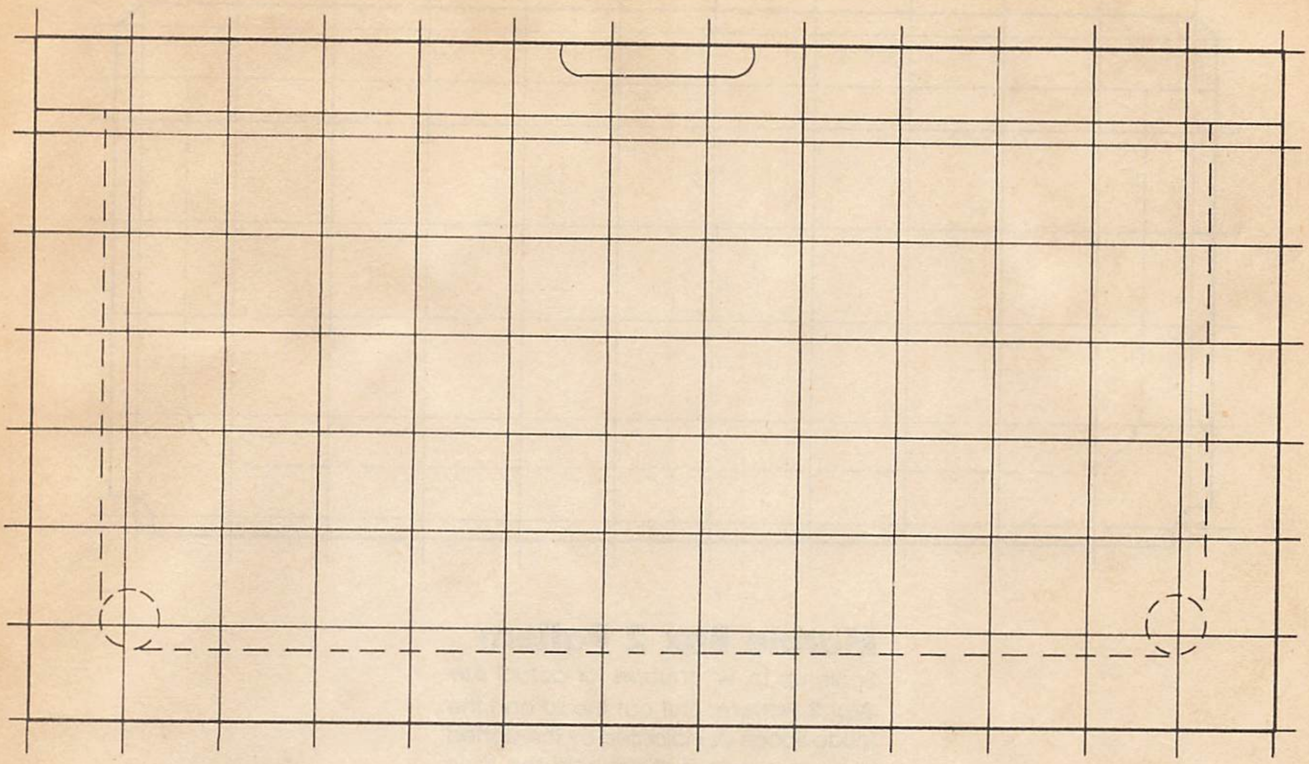


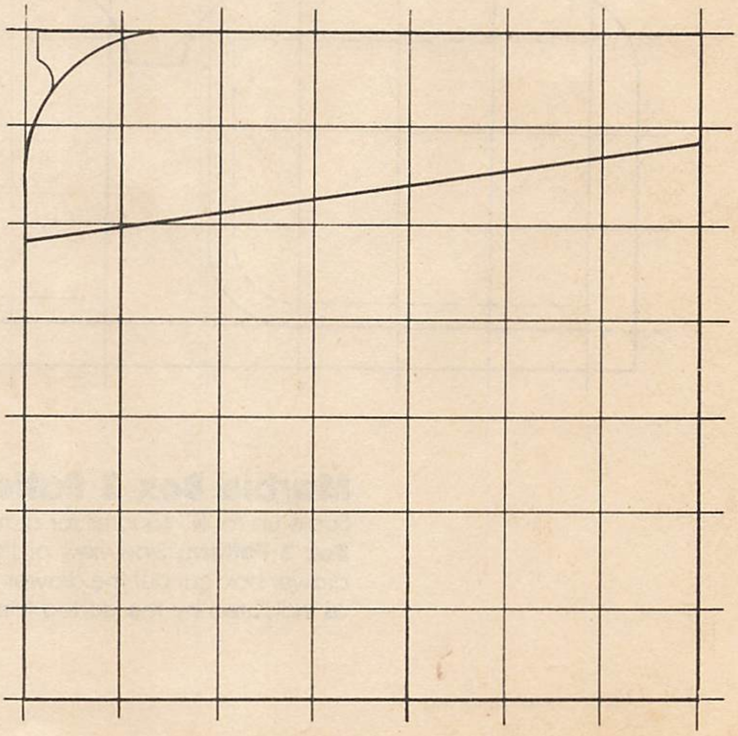
Fig. 8



Marble Box 1, Pattern A

Scale up to ¾" squares for actual size

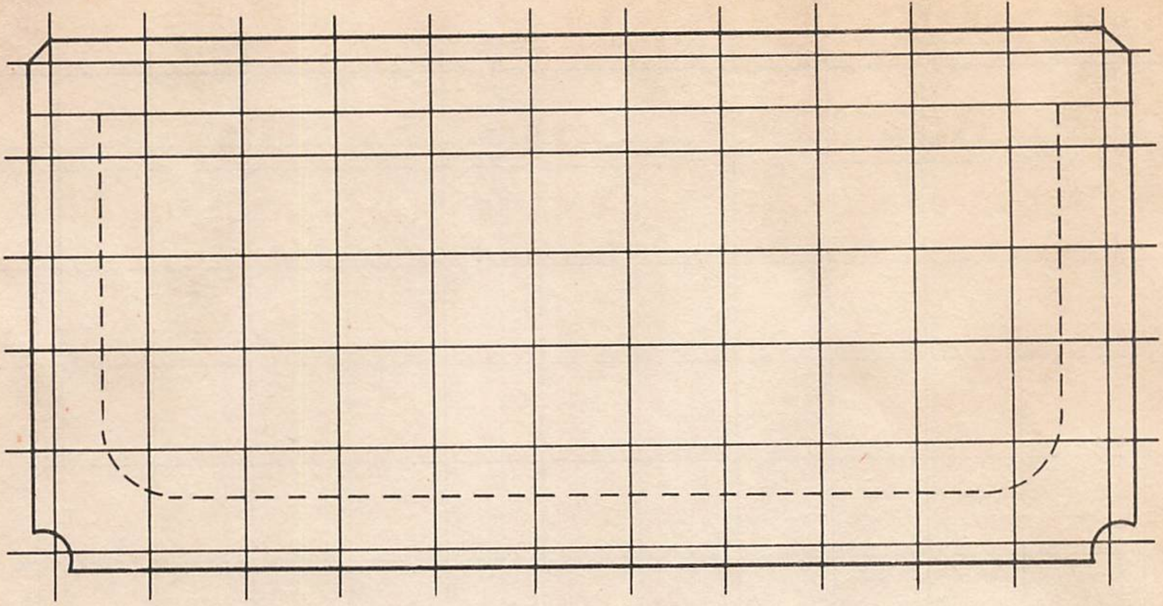
Box 1, Pattern A: Before cutting out the inside space, drill two ⅜" holes so you can turn the blade 90 degrees to make the cut.



Marble Box 1, Pattern B

Scale up to ¾" squares for actual size

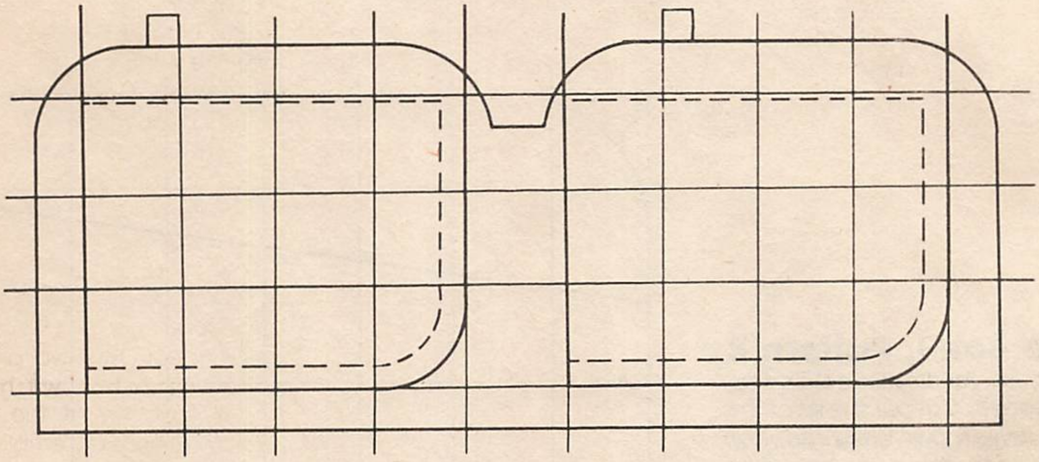
Box 1, Pattern B: Cut out the lid of the box at the angle shown in this side view; add the hinges about an inch from each end at the top of the diagonal cut.



Marble Box 2 Pattern

Scale up to ¾″ squares for actual size

Box 2 Pattern: Cut out the lid and the inside space as indicated by the dotted lines; glue a lip that will hold the lip in place on the inside of all four sides.



Marble Box 3 Pattern

Scale up to ¾″ squares for actual size

Box 3 Pattern: Side view of the two-drawer box; cut out the drawer spaces as indicated by the dotted lines.

Box With Goose Lid Inlay

Make this goose in the style you choose on a large or small box with the option of handmade hinges.

by James A. Jacobson

Many variations are possible when you design the inlay on the lid of this elegant box yourself. When complete, it can be a storage box; or you can add a tray for a jewelry box. Change a few dimensions and the box will hold a 4½" disc musical movement. Wooden hinges add elegance for those willing to invest some extra care in construction.

The lid and box are made from different woods. The splines in the mitered joints reverse the woods: dark on light, light on dark. The inlay is designed so that a portion of the goose extends out onto the edge of the lid for an interesting appearance.

SUPPLIES

- ½" walnut (for box and background inlay)
- ½" oak (for lid)
- ¾" wild cherry (for goose)
- Soft maple (for goose neck insert)
- ¼" plywood (for lid insert and bottom piece)
- Block of white ash or other wood 2" T x 3¼" L x 3¼" W (for hinges; or use a pair of metal hinges)
- Table-mounted router
- ¾" mortise router bit
- Band saw (with ½" blade)
- ⅛" piano wire
- Drill
- Vise
- Dremel moto-tool (with small bit and router base)
- Construction paper
- Rubber bands
- Stain (optional)
- Finish
- Saw and chisel (optional)
- Abrasive paper or finishing sander
- Pad sander

INSTRUCTIONS

Finished size of box is 7½" L x 8½" D x 3" H; lid walls are 1½" high. These dimensions can be changed as desired.

Note: After cutting the box and lid walls to length, do the mitering and routing, following the example or as desired.

Hinges

The hinges should be placed before the inlay work begins. If you would like to use wooden hinges, which will often outlast and perform metal ones, make several sets (in case you break one or drill a hole incorrectly) as follows: make a mortise or groove in one end (end grain) of the ash block. Use a ¾" mortise router bit on a table-mounted router to obtain hinges of the proper size. Lay out the block surface so that you can cut the mortise in the exact center of the block. Remember, you will be cutting the mortise in the end grain, so place your pencil marks accordingly.

Align the fence/guide on the router table to the block. Be certain that the marked center lines on the block's surface line up with the mortise bit. Set the bit to the depth of cut, and rout the mortise. You may want to make two passes over the bit, set at different cutting depths, to achieve the ½"-deep mortise. You are routing into cross grain, which can be rather demanding on the bit, especially if you use ash; so be sure to hold the block tight against the fence/guide when moving it over the bit.

After the ¾" mortise has been made in one end of the block, lay out the other end for cutting the tenon. The tenon should be ½" long, but only about 11/16" wide. This is to allow for smooth movement of the hinge knuckle. Lay out the dimensions of the tenon on the block surface (the end grain opposite the mortise). It is best cut on the band saw using a ½" blade, which produces a reasonably smooth cut surface.

After the tenon has been cut, set the band saw fence for ripping the hinges from the block to a thickness of ½". For this style of box, you need a hinge system at least ½" thick, but you can increase or reduce the thickness according to the size of the box and lid you are making. Slice several hinge sets, two sets for the box and extra ones for use in the event of breakage. Do not cut them into their two-leaf sections yet.

The hinge leaf placed on the back of the box is the one with the mortise. The lid leaf is the piece with the tenon. See **Figure** 1 to get a sense of this and see their size relationship. It is a good idea to cut the leaf for the box twice as long as the lid leaf. With the dimensions of the block used, cut the bottom (mortise) leaf 2" long and the top (tenon) leaf 1¼" long. Later you can reduce the length of both and give them some decorative corner cuts.

Do not do any shaping or rounding of the tenon until you have drilled a ⅛" hole through the two pieces for the piano wire (which will hold the two pieces together at the knuckle). To simplify drilling, assemble the hinge, tenon in mortise, and place the assembly in a vise (be sure the tenon is all the way into the mortise before tightening the vise). Center the drilled hole on the mortise wall surface and make sure it will pass through the middle of the tenon. Take your time during this procedure, and be certain to drill the hole straight, placing it where the wire will go (pieces of wire and position of hinges are shown in **fig. 1**).

Continued on page 46

Box With Goose Lid Inlay

Continued from page 45

Cut the hinge wire longer than required, so you can slide it in place and pull it out when shaping the tenon and knuckle edges for smooth movement. When you have drilled wire holes in the pair of hinges to be used on the box, slide the hinge wires into place. Note how the knuckle binds when you attempt to move the two parts of the hinge. Examine the tenon and its shoulders to find where the bind originates. With a pencil, darken the wood areas that need to be reduced and rounded: you will definitely need to round over the end of the tenon. Remove hinge wires and reduce the marked areas and tenon end. Reassemble hinges and check movement again. Repeat this process until the hinges open smoothly (if the wire is a bit loose, after you have sanded the side walls of the hinges, place a small spot of glue on the end of the wire). Cut off the extra length from the wire so that the ends are flush with the outer walls of the mortise.

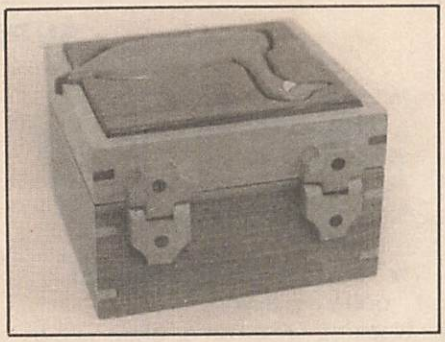
Place the assembled hinges on the back walls of the box and lid. If they look too long for the box, cut some length off both sets. Sand edges and corners of hinges until they are rounded.

While the hinges can be glued to the back surfaces of the box and lid, it is best to screw them in place. Drill a screw-plug hole ⅜" in diameter in the middle of each hinge leaf, at least halfway through the hinge thickness. Drill another hole through which the screw threads can easily pass. You will also need to drill small pilot holes for the screws in the lid and box surfaces. Prepare ⅜" plugs for the screw holes (**Figure 1** shows decorative plugs made from contrasting wood).

Before securing the hinges in place on the box and lid, place a piece of construction paper between the back edges of the lid and the box. This will elevate the two edges and prevent the hinges from binding. Stretch a large rubber band over the box and lid to hold the paper in place and make it easier to attach the hinges.

Center the hinges on the back surfaces. To place them properly, align the top edges of the mortise walls with the top edge of the box. Spread glue on the surfaces of the hinges, being careful not to get any on the moving knuckle. Put the hinges in place and secure them to the box and lid with screws. Glue the plugs in the screw holes; sand flush when dry.

If the front and side edges of the box and lid are not flush after the hinges have been attached, you can sand them on a belt sander; however, don't remove too much wood.



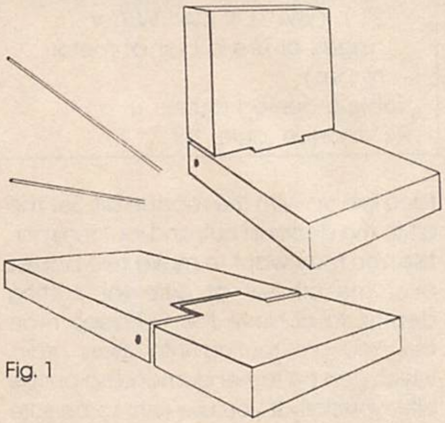


Fig. 1

Inlay

Choose the woods you wish to use, and stain them if desired. In the example shown, the box is walnut and the lid is oak. The background inlay in the lid is also walnut; the goose is wild cherry; the light neck insert is a piece of soft maple (use this to approximate the plumage of a Canadian goose).

Measure and cut the inlay background from ⅝" stock. Plan how you want the grain of the inlay to run. Be certain the inlay fits neatly into the recess with no gaps between it and the lid edges. Take your time measuring and cutting.

Make a pattern of the shape of a goose from construction paper. The goose on the box in the photograph is approximately 6½" x 5¾", but there is room for a larger bird if desired. Keep the profile simple, and work on the pattern until you are satisfied with it.

Trace your pattern on ¾" cherry. Remember to lay out the pattern according to how you want the wood grain to run in relation to the inlay background. With a scroll saw or band saw, cut out the goose, then place the background inlay in the lid recess and trace the goose on the surface. In the example shown, the goose is placed in the inlay so that its tail feathers extend onto the edge of the lid. Cut the goose outline from the inlay background, and from the lid edge if your goose extends into it. Cut down to the top of the plywood insert but no deeper. A Moto-Tool with a small bit and router base works well for this procedure. You may want to use a saw and chisel to remove the wood from the lid edge.

Replace the inlay background in the lid recess, and put the goose in place; check for fit. With the goose in place, draw the small triangular area on the bill and neck section. Cut out this area and make an exact duplicate of the piece from soft maple. Check again to make sure all parts fit.

Using abrasive paper or a finishing sander, round the edges of the walnut inlay background. You can also shape the goose with a pad sander as desired, tapering the edges of the main piece to give it roundness and depth, indenting the area in front of the tail to create the impression of feathers sticking up and out, or reducing and shaping the bill.

Remove the background inlay from the lid and smooth it for finishing. Spread a coat of glue on the plywood lid insert and replace the inlay, pressing it down into the glue. Place the goose and neck piece in their recess and force them into the glue as well. You may want to clamp the entire assembly with rubber bands until the glue is dry. Remove any excess glue with fine-grit sandpaper.

Finishing

Finish the box as desired.

Adapted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *Making Small Wooden Boxes* by James A. Jacobson ($9.95). ©1986 by Sterling Publishing Co., Inc. For more information about other fine quality woodworking books, please see the Sterling Publishing Company address in our Source of Supply list on page 70.

Jewelry Box With Ivory Inlay

Construct an heirloom piece with the look of antique ivory.

by James A. Jacobson

This project makes a functional storage box or, if you extend your creativity, an attractive jewelry box. The ivory-look inlay is luxurious, but ecologically friendly and not hard to make.

The lid inlay uses vegetable ivory for the flower. This ivory is an interesting and challenging substance to work with. It comes from the nut of the tagua palm tree, which is common in South America. The nut ivory is very hard and can be polished to a nice luster. When soaked in water, it becomes quite soft and easy to carve. It is ideal for box inlay work because provides a white material that can be tooled easily with microburrs. A number of mail-order craft suppliers stock these nuts (see **fig. 1**).

SUPPLIES

- ⅝" emeri (for walls and lid)
- ¼" cabinet-grade plywood (for bottom section)
- ½" material (for tray)
- ⅜" green poplar (for leaf)
- ⅜" osage orange/hedge (for flower stem)
- ⅜" walnut (for background inlay)
- Two brass butt hinges
- Two brass escutcheon pins and brass chain
- Band saw (with ⅛" blade)
- Scroll saw (optional)
- Back saw and chisel (otional)
- Wood glue
- Router
- Sandpaper
- Screws
- Drill (with ¼" wood bit and multi-spur bit)
- ¼" plug cutter
- Bar clamps
- Belt sander
- Appropriate carving tools
- Paste wax
- Finish

INSTRUCTIONS

Finished size is 13" L x 5" H x 5" W, including 1"-thick lid.

Note: Cut ⅝" stock (emeri) to indicated dimensions (or size of your choice) for the lid and front and back walls. Cut the bottom panel from ¼" cabinet-grade plywood. A small tray to fit inside the box may be made from ½" material.

Making the joints

First you need to mark the wall thickness on the ends of all the wall panels. Use the edge of one panel as a pattern: align the edge with the end of another panel, and trace the line on the outside wall surface. On front and back walls only, place a mark on the thickness line, 1" from the top of the wall. On the same line, make another mark 1¾" from the bottom edge of the wall. Make these measurements and marks on the thickness lines of all panels or walls.

On the front and back walls only, draw straight lines from the marks on the thickness lines to the edges of the walls. Do this on both ends of each long wall. These lines, including the thickness line, lay out the area on the front and back walls that will be cut out. Be sure to label and/or number the six panels so you can identify the front and back, top, bottom, and sides, as well as which direction is up for each piece (**fig. 2**).

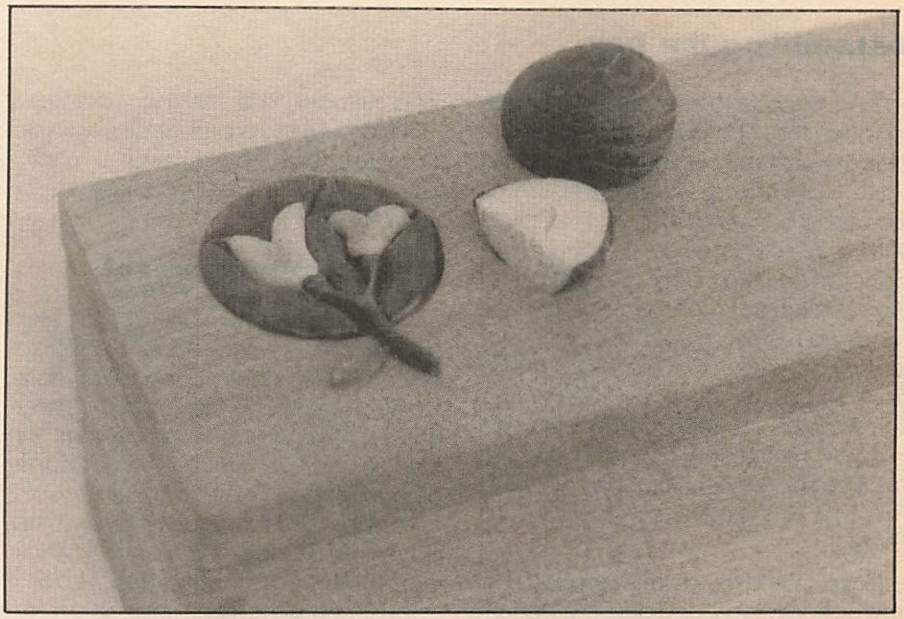


Fig. 1

Using a band saw or a backsaw and chisel, cut out the marked areas on the front and back panels.

Continued on page 48

Jewelry Box

Continued from page 47

Trace the cutouts from the front and back walls onto the surface of the side panels as follows: align the cutout area over one side panel, supporting the pattern piece with the other wall. The end of the side panel should be directly below the wall on the thickness line. Be certain to align the top and bottom edges of both walls before tracing. You will be making two lines, traced from the cutout, onto each side wall. The traced lines should stop at the thickness line on the side panel. You're drawing the tenon or finger on the side wall that will fit into the cutout in the front or back panel (see **fig. 2**). Trace and cut one side panel at a time, numbering the joints as you go, and making sure not to rush this step.

Use the band saw to cut out the traced areas. To insure a tight fit, cut inside the traced lines and thickness lines (toward the piece that is being cut out).

After all the panels have been cut, assemble the box and check for fit. Any pieces that extend beyond the panels' surfaces can be sanded off after final assembly.

Sand outer surfaces of the box on a belt sander and reduce any joint extensions. Sand the underside of the lid as well. If desired, sand finger slots into the edge and bottom surface of the lid.

the flower design on the surface of the ivory, then cut it out on a scroll saw (a 1/8" blade on the band saw will do the job) as you would a wooden flower shape. Shape or carve the flower with

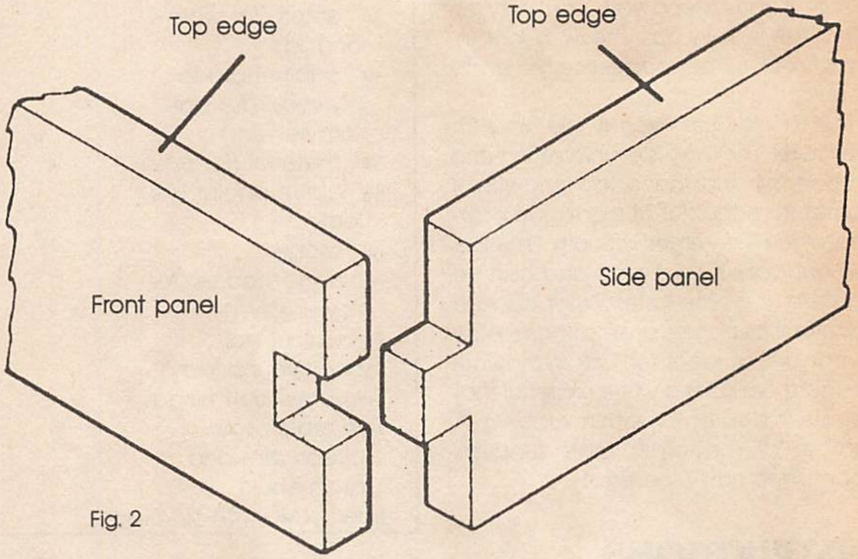


Fig. 2

Assembling the box

Grooves need to be routed in the walls to hold the 1/4" plywood bottom in place, and screw-plug holes drilled in the walls. Make the holes, centered on all laps, using a 1/4" wood bit, and cut plugs with a 1/4" plug cutter. You can make decorative plugs from a contrasting wood; the box in the photograph was made from emeri, a beautiful exotic that is easy to work, and the plugs made from scraps of the same wood. The screw holes should be drilled at least halfway through the walls. You may wish to drill a smaller hole through the rest of the wall to permit the screw to slide through.

Place glue in the grooves that will hold the bottom piece, and glue the bottom in place. Spread a thin coat of glue on all joint surfaces that make contact with one another. Assemble the box and clamp with bar clamps, using blocks to avoid marking the surfaces (try not to place clamps over the screw-plug holes). Drill pilot holes for the screws, and screw the box together. Glue and tap the plugs into the screw holes. Bring surfaces to a finishing readiness.

Attach two brass butt hinges, such as 6" jewelry-box hinges, and a chain secured with escutcheon pins as a stopper.

Inlaid embellishment

With a multi-spur bit, drill a 2½" diameter recess in the lid, to a depth of 1/4". Cut the background inlay from walnut. It should be the same diameter and 3/8" thick. Cut the double stem for the flowers (3/8" thick) from Osage orange (hedge). Note that the stem extends onto the lid surface beyond the background piece. Add a small 3/8" thick leaf cut from a strip of green poplar.

The flower is made of vegetable ivory, which comes from the nut of the tagua palm, and is available from a number of mail-order craft suppliers. One nut (about 1½" in diameter and about 3" long) is enough for this project. First sand a small area flat on the surface of the nut; then rest the flat part on the table while you cut it in half on the band saw. Cut one 1/2" slice from each half. Draw appropriate tools. As you will discover, the ivory shapes quite easily; it becomes soft when soaked in water, but dries hard and polishes to a nice luster.

Finishing

Finish the box as desired, but do not put any finish on the ivory. Paste wax and polishing will enhance its appearance enough.

Adapted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *Making Small Wooden Boxes* by James A. Jacobson ($9.95). ©1986 by Sterling Publishing Co., Inc. For information about other fine-quality woodworking books, see the Sterling Publishing Company address in our Source of Supply list on page 70.

Terrific Toys 15

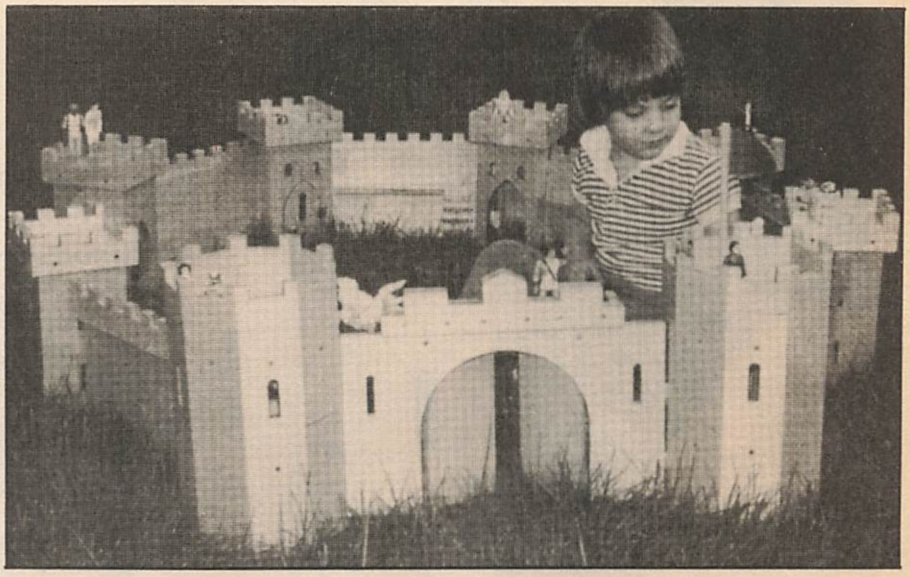
Create A Fantasy Castle

Your kids will be enthralled with this fantastic toy!

by Bill Stankus

SUPPLIES

Table saw
Scroll saw
Disc-belt sander
Portable saber saw
Electric drill
Doweling jig
Brad point drill bits: ¼", ⅜", ½"
8" compass
Belt clamps
"Fast" clamps
Yellow carpenter's glue
Hot (animal hide) glue
Deft clear wood finish



Castles are the setting for many imaginative stories–from the exploits of crusading knights to the adventures of star- trekking spacemen. What better toy is there to design for your child's imaginative play? The time you spend building this sensational toy will be more than matched by the hours of play your children will enjoy with their fantasy castle.

The castle includes secret rooms, towers, walkways, and parapets. It is scaled to the "action" play figures (3"-5" high) found in most toy stores. Other attractions include a 44" diameter courtyard, a large front gate, and towers with doors that open and close.

The modular design of the castle features repetitive elements that simplify construction, walls that are easily attached to the towers by means of a simple hook-and-notch system, and parts that can be completely disassembled for easy storage. Furthermore, the castle can be enlarged by simply constructing additional walls and towers.

INSTRUCTIONS

Selection of wood

The essence of any project is the selection of quality materials so that the finished product is not only aesthetically pleasing but durable as well. The castle can be constructed of ash, birch, or cherry cabinet-grade plywood. One of the finer types of plywood that is becoming increasingly available to amateur woodworkers is a solid birch plywood variously referred to as Finnish, Arctic, or Baltic birch. This is a high-grade plywood (the ½" thickness has nine laminations) which lends itself well to the drilling and cutting required for the castle's construction.

Cutting out the castle

Cut all pieces to dimensions shown in the Bill of Materials list and sand to a proper finish. Since the castle is built from plywood, which is typically a large sheet, it is easier to rough-cut the pieces using a handheld sabre saw, then final-cut to actual dimensions, using a table saw. Optionally, the rough-cut pieces can be edge-finished with a router and a straight cutting bit. Plan cuts such that all towers (walls, parapets, etc.) are cut at one session, thus guaranteeing a consistency between similar pieces.

To cut the wall notches into which the wall hooks fit to make pieces interconnect, do the following:

A. With a pencil, draw outline of notches on wood.
B. With a ½" drill bit, drill out several holes within the outline.
C. Place a scroll saw blade through one of the holes and attach it to the scroll saw (**fig. 1**).
D. Proceed to cut out the area.

All windows can be cut in the same manner, except that one drill hole should be positioned at the top of window and cutting should proceed neatly from that hole.

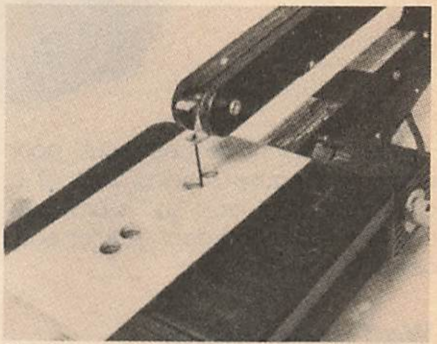
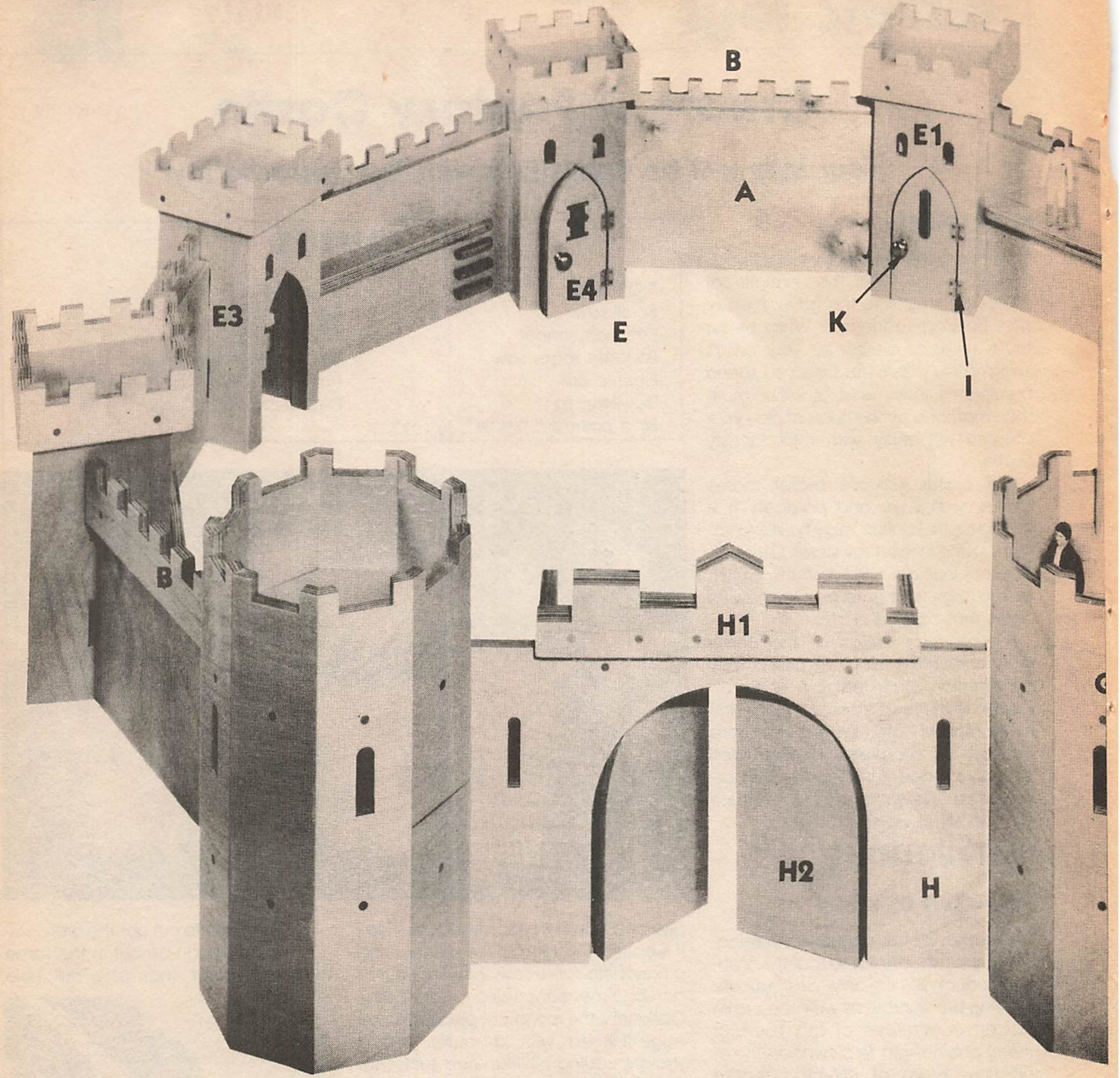


Fig. 1

Continued on page 50



After doors have been cut, door edges will require sanding so that a clearance of at least 1/16" is provided between door and door wall for easy opening and closing.

Wall construction

After cutting walls and battlements, align the two pieces and drill three doweling holes. Assemble, glue, and then allow sufficient clamping time. Cut walkway and drill two holes in it for doweling to the wall. Drill matching holes in the wall to accept walkway dowels; assemble, glue, and clamp. Cut pieces for the ladder and attach these to wall with glue and decorative brass nails.

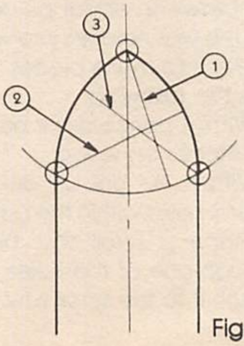


Fig. 2

Tower construction

Draw all doors, windows, and notches onto plywood. Refer to **Figure 2** for the proper compass drawing technique for arched doors. Cut a 45 degree miter on all side edges. Then cut out all doors, windows, and notches.

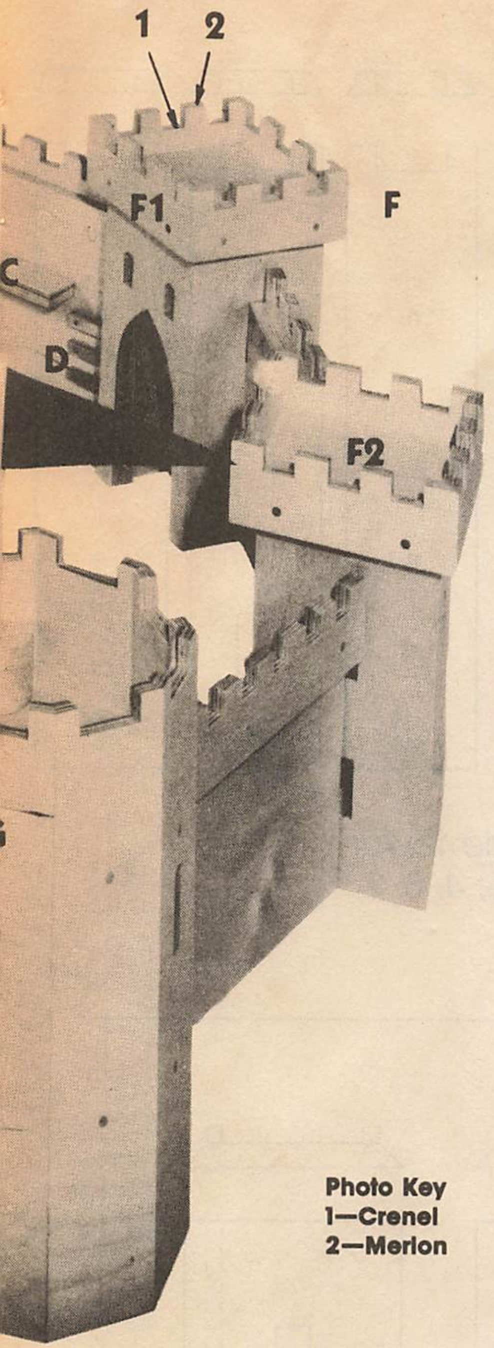


Photo Key
1—Crenel
2—Merlon

BILL OF MATERIALS

Note: Use ½" plywood throughout; see Photo Key for part placements.

Part	**Description**	**Size**	**Quantity**
A	Wall	7" x 14¼"	7
B	Wall battlement	2" x 12"	7
C	Wall walkway	1½" x 8"	4
D	Wall ladders	¼" x ⅜" 1¾"	4
E	Wall towers	---	6
E1	Door section	4⅝" x 9"	6
E2	Back section	4⅝" x 9"	6
E3	Side section	4⅝" x 9"	12
E4	Door	(see drawing for dimensions)	4
E5	Inside corner braces	5/16" x 5/16" x 9"	24
E6	Door stops	5/16" x 5/16" x 1"	4
F	Parapets	---	6
F1	Parapet battlements	2" x 5¾"	24
F2	Parapet floor	4¾" x 4¾"	6
G	Main gate towers	---	2
G1	Wall section	2¾" x 13"	18
G2	Floor	(trace from built tower)	4
G3	Floor support	½" x ½" x 2"	10
G4	Flag support	2" semi-circle, 1" thick	1
	Flag pole	⅜" x 8"	1
H	Main gate	12" x 17¼"	1
H1	Gate battlement	2¾" x 11"	
H2	Gate door	(see drawing for dimensions)	2
I	Tower door hinges, brass	¾" x ⅝"	2 per door
J	Gate hinges, brass	1" x 1½"	4
K	Tower door knobs, brass	½" dia. ball, screw thread type	1 per door
L	Dowels	¼" x 1"	120
M	Round head nails, brass escutcheon pins	¾"	40

Carefully align inner corner braces at edge of miter. Attach braces with glue and decorative brass nails to door and back pieces. These braces aid in squaring tower sides for gluing, and also provide an additional glue surface for strength.

Spread glue on all edge surfaces and clamp tower pieces together. Check squareness before final tightening of clamps.

If tower is to have a door, glue a doorstop to inside of front piece. Cut a design into door, then attach doorknob and hinge.

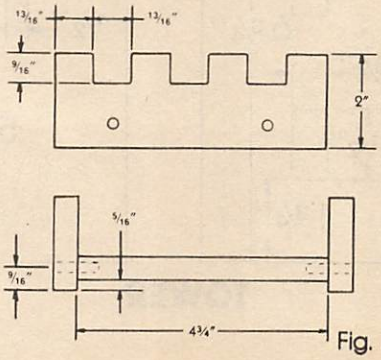
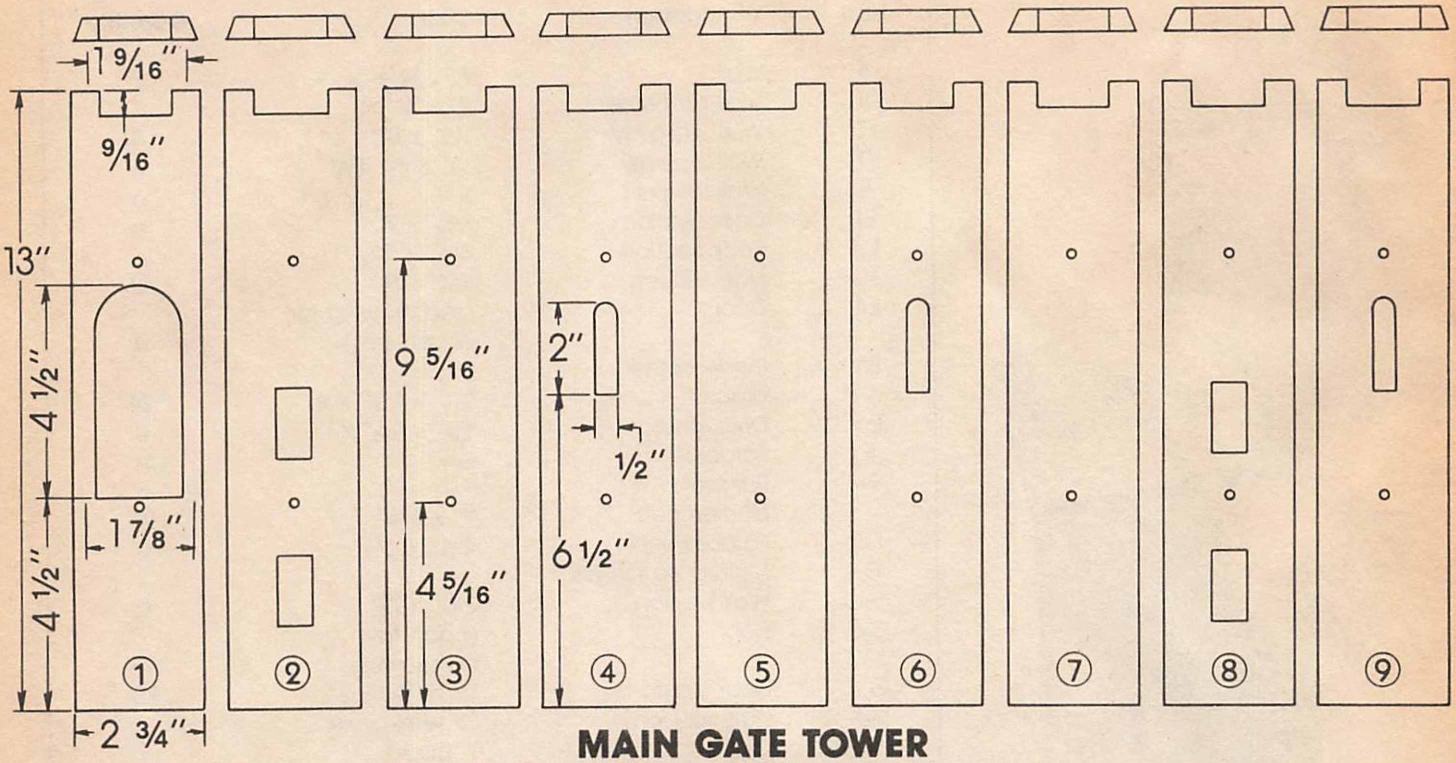


Fig. 3

Parapet construction

After cutting battlements to length and width, cut a 45 degree miter on all side edges. With a pencil, draw battlement configuration on plywood. Use scroll saw to cut out crenels and merlons in each battlement. Attach battlements to two opposing sides of floor with glue and dowels (**fig. 3**). Next, attach remain-

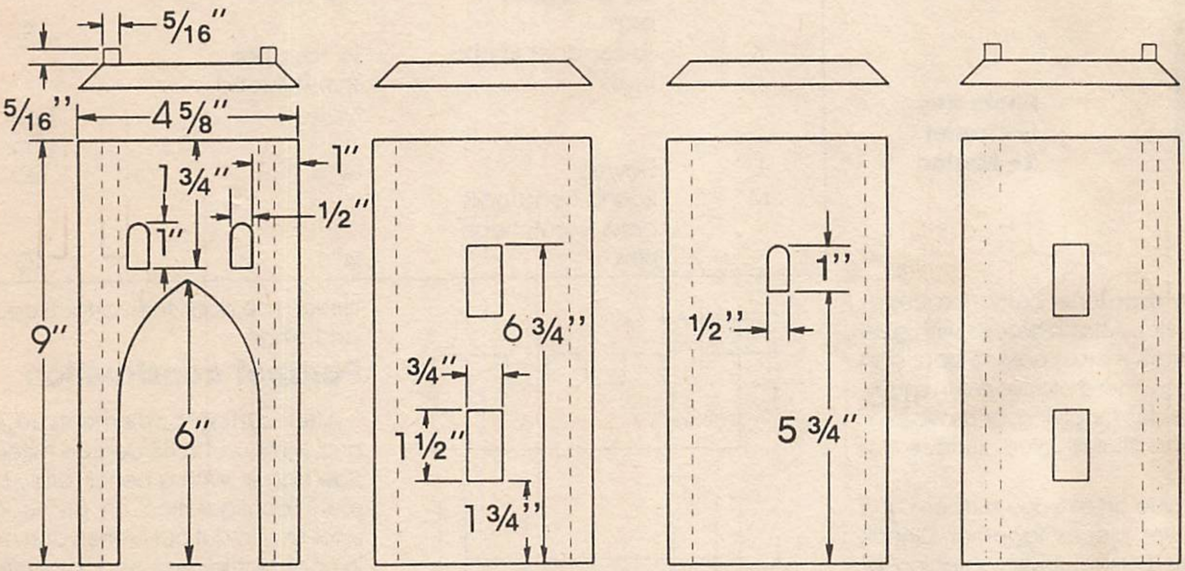
Continued on page 54



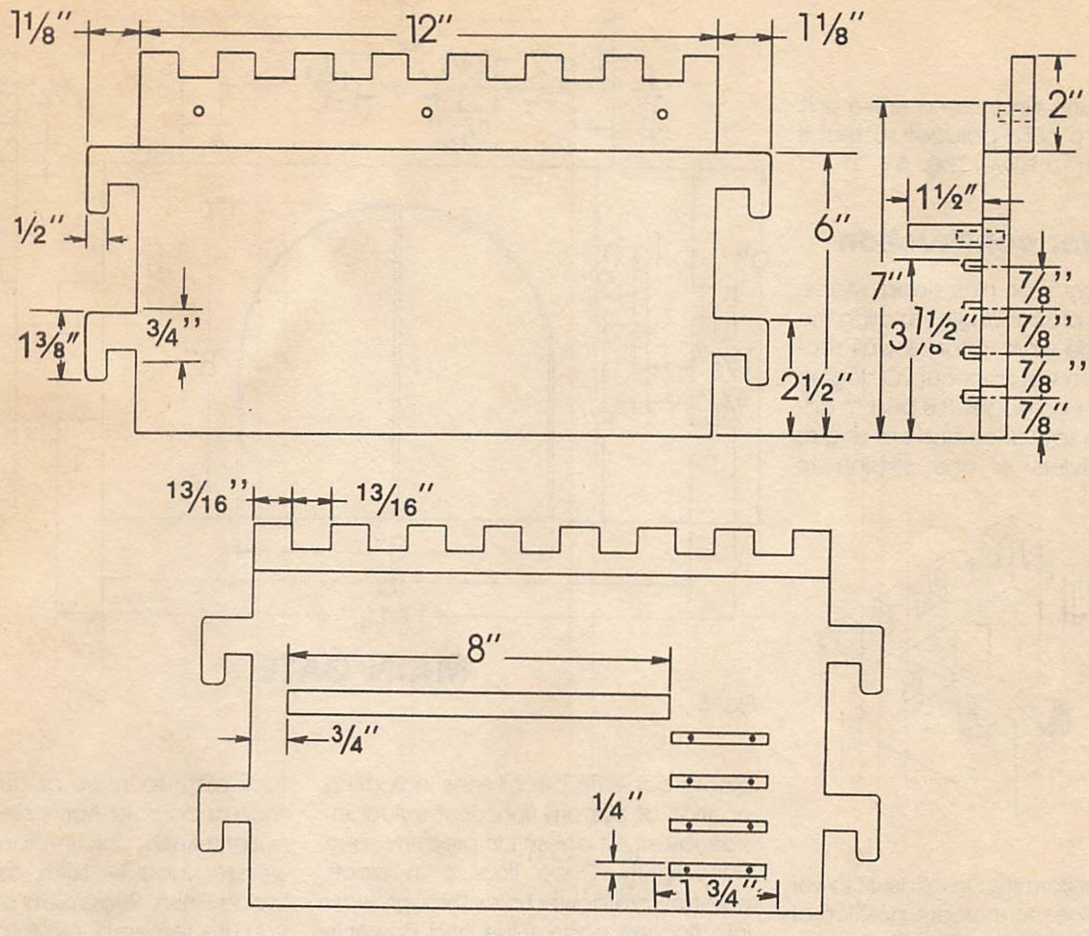
MAIN GATE TOWER

View from inside castle–the right side tower

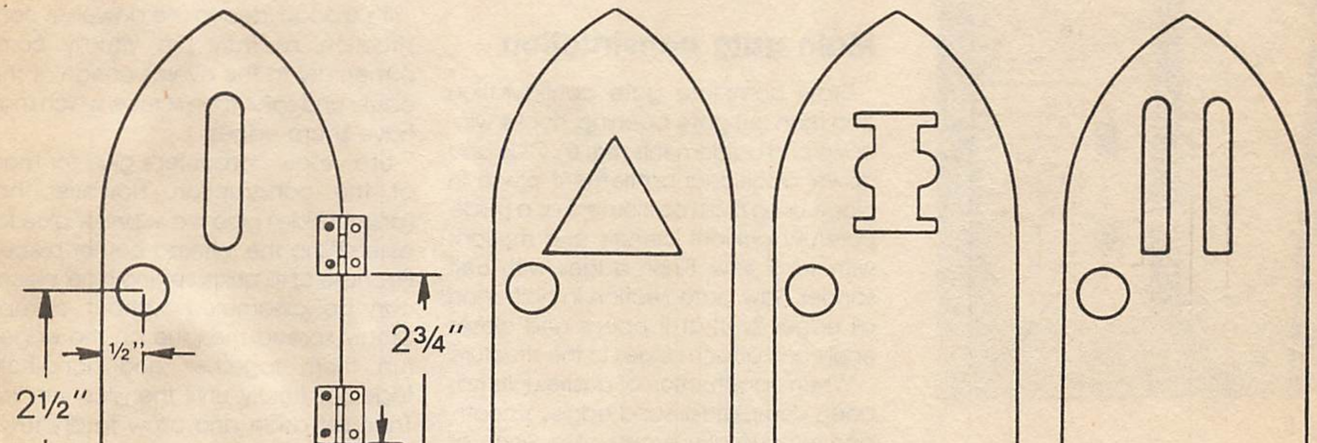
Left tower sequence: 1, 9, 8, 7 , 6, 5, 4, 3, 2



TOWER



WALL



DOOR DESIGNS

Fantasy Castle

Continued from page 51

ing battlements and clamp entire unit. Remember to build parapet so that it rests easily on a tower (**fig. 4**).

Gate tower construction

The nonagon, or nine-sided shape, provides the proper angles to align the gate and side walls. After all wall sections are cut to size, miter-cut 20 degree angles on all side edges. It is best to adjust the table saw once and cut angles for both towers in one session to guarantee uniformity. On inside of tower walls, draw lines to indicate position of the two floor bottoms (**fig. 5**). On outside, draw with pencil the position of all doors, windows, and notches. Next, cut out all openings with scroll saw, assemble, and glue unit together.

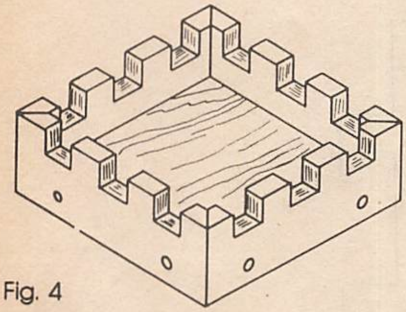


Fig. 4

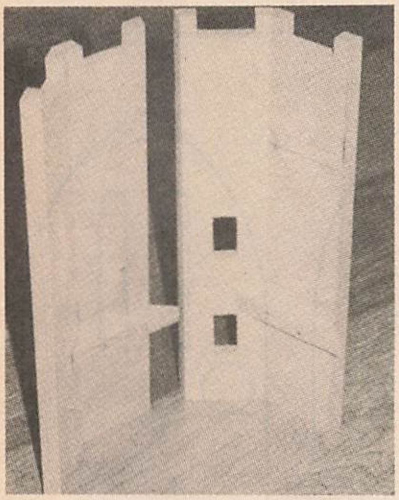


Fig. 5

Once tower is glued up, place it on top of the wood that is to be the bottom floor and trace the shape. Repeat for upper floor. Glue small supporting blocks beneath pencil lines indicating position of bottom floor. Place floor inside tower. If it doesn't fit properly, sand sides lightly. Once floor is in place, carefully drill dowel holes through walls into flooring edge. Glue and dowel in place. Repeat for upper floor.

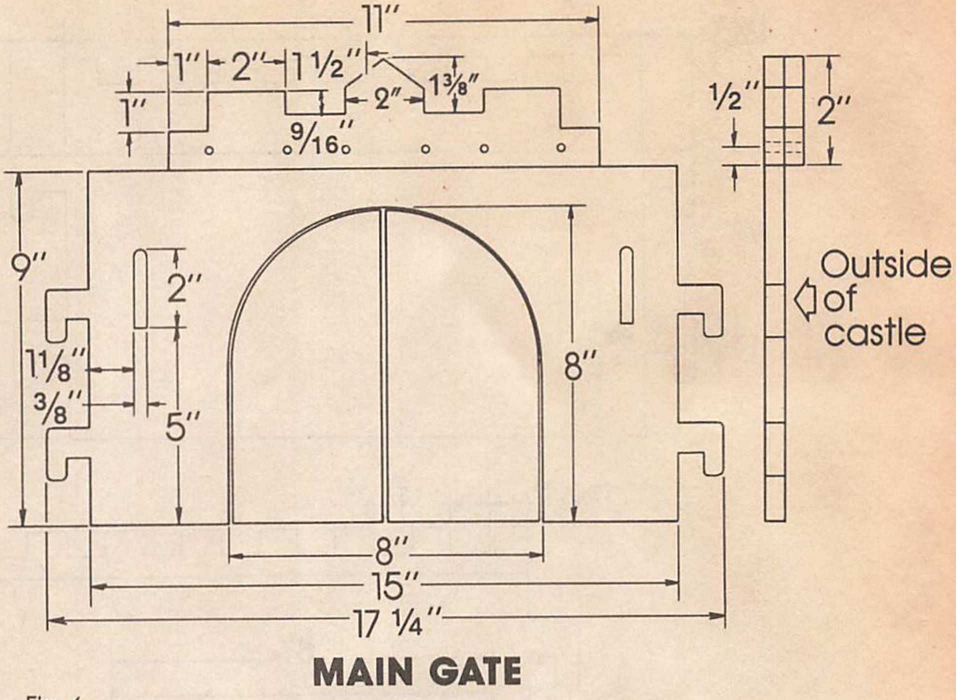


Fig. 6

Shape flag support with belt/disc sander and drill a hole for flagpole. Glue and dowel support in place. Make a colorful flag and attach to pole.

Main gate construction

Draw complete gate configuration and then cut gate opening, hooks, windows, and battlements (**fig. 6**). Glue and dowel additional battlement piece in place. Using main battlement as a guide, carefully cut out crenels and merlons with scroll saw. Finish edges with belt sander. Saw gate section in half, sand all edges so that it opens and closes easily, and attach hinges to the structure.

When construction of castle units has been completed, sand edges smooth, and remove any excess glue. Since all units are interchangeable, test that hooks fit easily into all tower notches; make any adjustments needed.

Finishing

Vacuum all structures completely to remove sanding dust and wipe with tack cloth to insure as dust-free a surface as possible. Apply several coats of a satin-finish polyurethane varnish or aerosol lacquer such as Deft Clear Wood Finish. Regardless of which finish you use, remember to follow manufacturer's recommended procedures for a satisfactory result.

Construction techniques

It's a good idea to use dowels in construction, as they are visually complimentary to the overall design of the castle and safer than screws, which may have sharp edges.

Use yellow carpenter's glue for most of the construction. However, hot (animal hide) glue is a superior glue for assembling the mitered corner pieces. Because of its quick setting time, pieces can be assembled without clamps. Simply spread the glue on the edges, rub them together, and hand-hold together tightly until the glue sets up. Then set aside and allow to dry fully.

Reprinted with permission from Dremel Compact Project Plan No. 40. For more information about this and dozens of other exciting Dremel project plans and quality compact power tools, please see the Dremel address in our Source of Supply list on page 70.

Terrific Toys 16

Horse-In-A-Hoop

Wood-craft a charming toy for your children.

by Sharon Pierce

Here's a quick project with lots of giddy-up for the kids' playtime. The scroll saw cut-out horse balances on a dowel set between two hoops (quilting hoops, which are available in most craft shops). When the horse-in-a-hoop is given a little nudge, the toy rolls along its merry way with its sprightly cantering steed showing grace and style. We think this project also makes a fine display piece on a family room shelf as well as a great gift or craft show item. Enjoy!

SUPPLIES

- ¾" T x 8" W x 12" L pine
- ¼" T x 1½" W x 5' L flat wood trim
- 5/16" dia. x 7" long wooden dowel
- Two 14" dia. quilting hoops
- Two large and two small wooden beads with 5/16" dia. opening (or substitute ⅝" dia. x 6" long wooden dowel)
- Acrylic paints: cerulean blue, mars black, titanium white, burnt umber, naphthol red light
- ½" artist's brush
- Yellow wood glue
- Medium- and fine-grade sandpaper
- Tracing paper
- Poster board (oak tag)
- Ruler
- Scroll saw (fine-tooth blade) or band saw (⅛" blade)
- Drill (with 5/16" and 21/64" bits)

INSTRUCTIONS

Finished size is approximately 14" in diameter.

Note: If this project is intended for a child's use and not display, exercise good judgment in your choice of non-toxic paints and in supervising the play of toddlers enjoying this toy.

Making the pattern

Trace the pattern for the horse and transfer it onto the poster board. Cut out this template and then trace onto the ¾" pine.

Cutting the pattern

Using your scroll saw or band saw, cut out the figure of the horse. Cut two 13¾" long pieces of the flat trim *(measure before cutting,* to be sure this is just slightly larger than the inside diameter of the circular quilting hoop; if not, you will not get a snug fit when gluing).

Also cut three 6½" long pieces from the flat trim. Now cut the 6½" strips in half lengthwise so that you have six strips ¾" wide by 6½" long.

Next, cut a 7" length of the 5/16" diameter dowel. If you do not have wooden beads, cut four ½" pieces from a ⅝" diameter dowel.

From one of the remaining sections of quilting hoop, cut two 1¼" pieces (**fig. 1**). Cut these both in half lengthwise. These small curved pieces will be used as supports when gluing the long strips of trim (crosspieces) to the hoops.

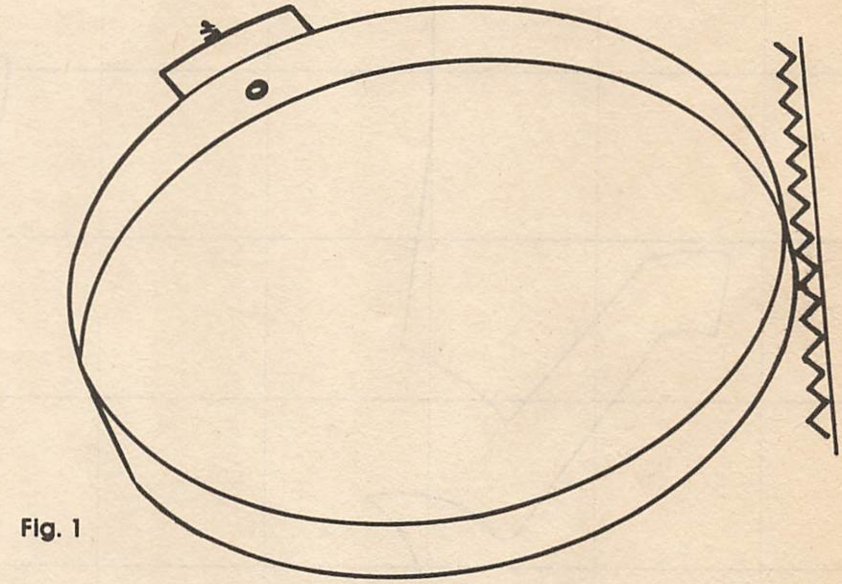


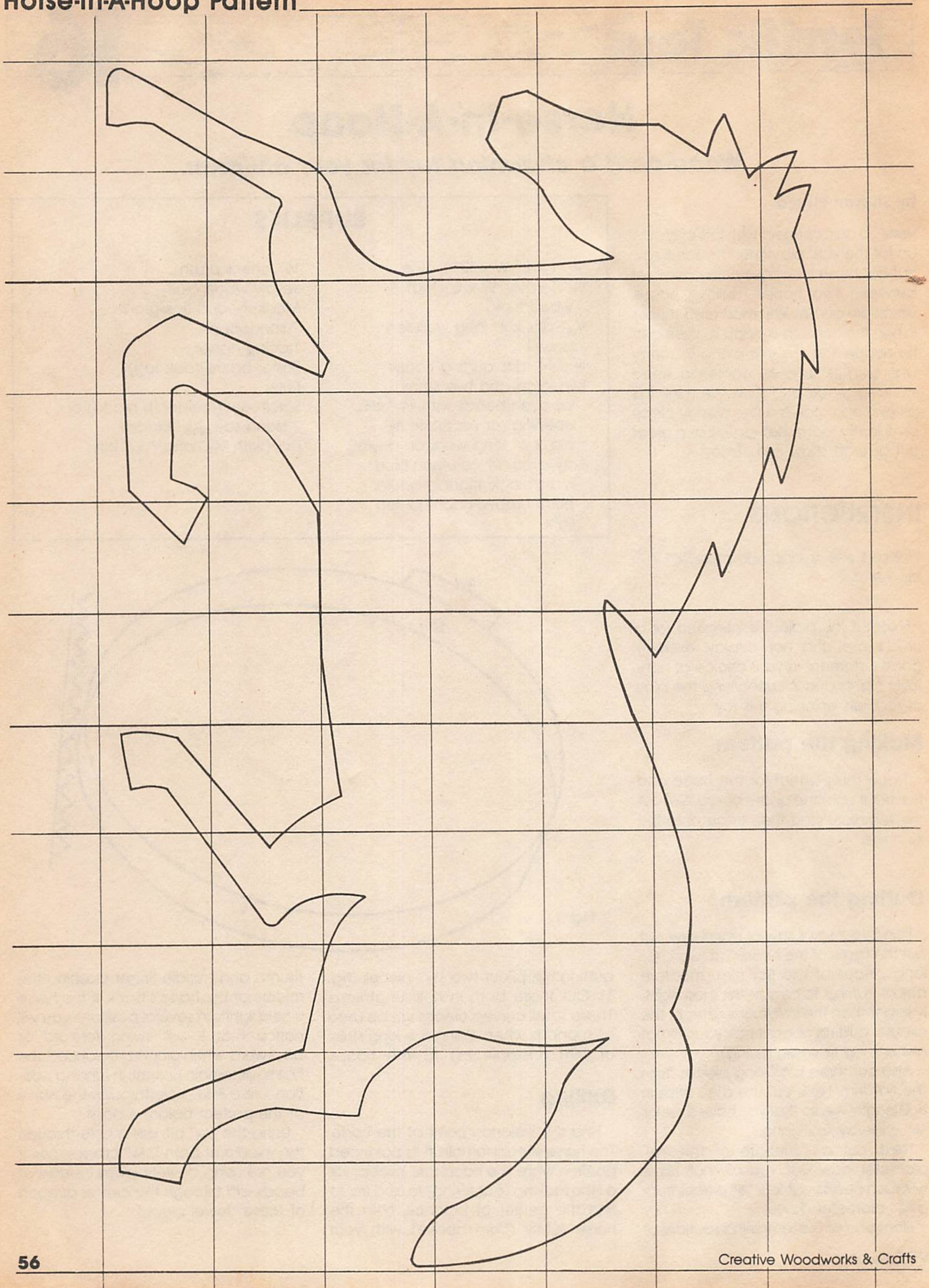
Fig. 1

Drilling

Find the balance point of the horse. The horse should remain in its balanced position while the hoop rolls, except for a little rocking (cantering) to and fro. To find the center of balance, hold the horse lightly (from above) with your thumb and middle finger clasping the middle of the horse's back. If the horse is held lightly in several positions, you will notice that it will swing forward or backward; when properly balanced, the horse will remain upright, in running position. Drill a 21/64" hole through the horse at this perfect balance point.

Using the 5/16" bit, drill a hole through the middle of both 13¾" crosspieces. If you are using dowel pieces instead of beads, drill through the center of each of these dowel pieces.

Horse-In-A-Hoop Pattern



Horse

Continued from page 55

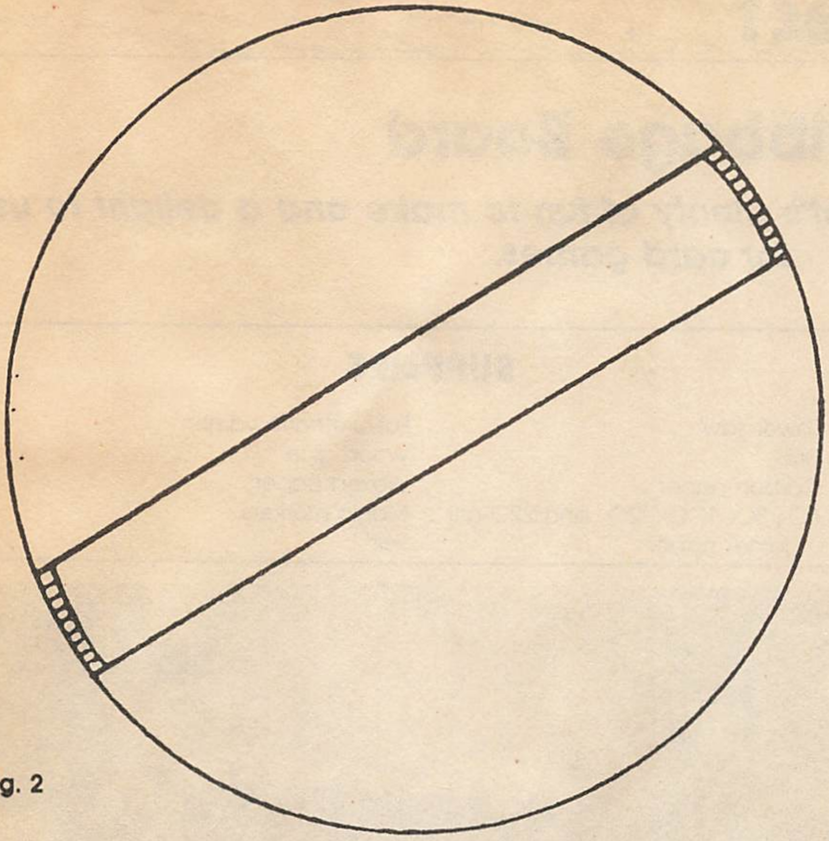


Fig. 2

Painting

Paint all pieces as follows (all measurements are approximate). Horse, outside beads: ½ tsp. red/½ tsp. burnt umber. Remaining pieces (except dowel, which is left its natural color): 1 tsp. blue/¼ tsp. white/¼ tsp. black. Let dry completely.

Assembling

Insert the dowel through the horse and then position two large beads on either side of the horse. These should be placed next to the horse, not against it.

Glue a crosspiece to each hoop, making sure they are positioned at the widest points of the hoop (**fig. 2**). At this time, also glue the small curved supports to the hoop adjacent to the crosspiece. Let dry.

Now slide each end of the dowel into a crosspiece. Let ¼" extend through the outside for the bead. Glue the 6½" support strips in place, one on either side of each crosspiece and one halfway between each crosspiece (see photo of horse-in-a-hoop). Let dry.

Sanding

Sand all pieces and edges smooth using medium-grade sandpaper. The edges of the horse may be sanded round with either an electric sander or by hand. Round the ends of the long crosspieces to fit into the curve of the hoop. Give all pieces a final sanding by hand with fine-grade sandpaper.

Reprinted by permission of Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 from *Making Old-Time Folk Toys* by Sharon Pierce ($9.95).©1986 by Sharon Pierce. For more information about this and other fine quality woodworking books, please see the Sterling Publishing Company address in our Source of Supply list on page 70.

Turned bowls

Continued from page 27

The turned-in feet are the result of another effort to give the piece a distinctive look. The bowl is screwed onto a faceplate for turning. After turning, the faceplate is removed and the wood is hand-carved away from the screw holes, leaving the feet. The hand carving on the bottom requires hand sanding, and then, to produce a uniform texture, additional hand sanding should be done on the rest of the piece. The finish is three coats of paste varnish.

Salad bowl

The salad bowl with the helter-skelter grain on its sides is turned from a 6" W x 6" L x 1½" T Douglas Fir Parallam structural beam section. Parallam beams are made in Canada. Leftover pieces might be available from a builder, but small pieces for use in turning will otherwise be difficult to locate. Parallam is made with strips of veneer about ½" wide indiscriminately laid in with the grain running in the same direction. The salad bowl is 5¾" in diameter and about 1½" high.

The bowl is fastened to a faceplate with double-sided carpet tape for turning. A bowl gouge is used inside and out. As with any laminate, a couple of hours of sanding is necessary. The nature of the material leads to some chipping and voids–for which filler can be used. The finish is several coats of polyurethane cut one-to-one with mineral spirits.

While double-sided tape eliminates the problem of screw holes, the tape can hold a piece to the faceplate with frustrating tenacity. With a fairly solid vessel, one technique is to pry the piece off the faceplate with a chisel, using the bevel as a fulcrum and applying steady pressure for over a minute or so. For fragile pieces, the prying method may present too great a risk. An alternative is to weight the faceplate and sit or prop the piece in a place where the faceplate can eventually fall off without damage to the piece. For example, in the case of the salad bowl, lead weights were hung on the faceplate and the bowl was then simply left sitting on top of an empty coffee can. The lead weight eventually caused the faceplate to drop off and fall into the coffee can, leaving the salad bowl sitting undamaged on top of the can.

Bonus Project

Cribbage Board

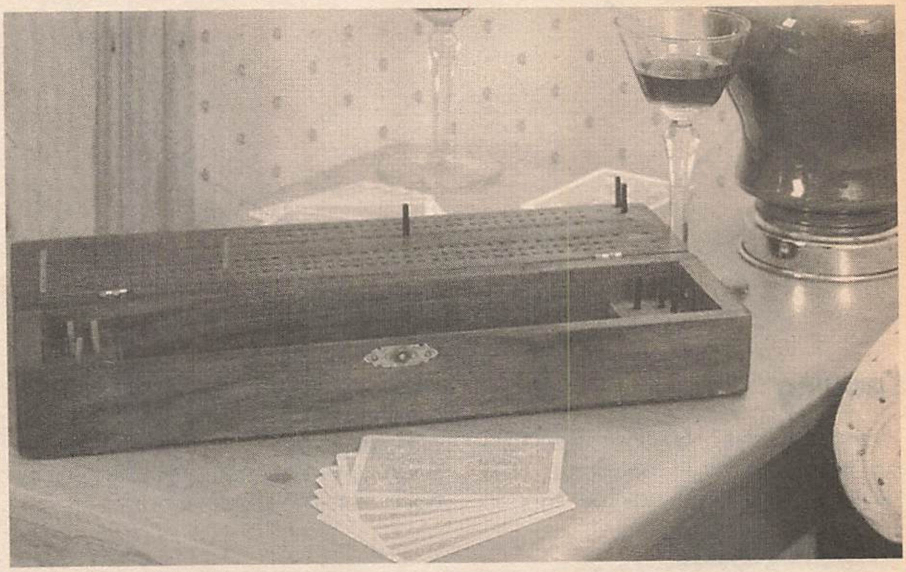
Here's a quick project that's plenty of fun to make and a delight to use for card games.

by Lavon Smith

A traditional craft and traditional game combine for one great decorative accessory. This black walnut Cribbage Board promises many hours of enjoyment. Beginner woodworkers will appreciate its simple construction and quick work-up. More advanced woodworkers will find this cribbage board a fine project to make as a gift or as a craft show item for sale. Some innovative wood carving on the lid would also make a very personalized sample of artwork.

SUPPLIES

- Power saw
- Drill
- Carbon paper
- 60-, 80-, 100-, 120-, and 220-grit garnet paper
- Polyurethane varnish
- Wood glue
- Waxed paper
- Magic markers
- Felt



INSTRUCTIONS

Note: Black walnut was used in the sample project.

Cutting the patterns

Cut the wood pieces to the sizes as indicated in the patterns. Sand all surfaces that are to face inside after case is finished with 60-grit sandpaper, then follow with 80-, 100-, and 120-grit sandpaper.

Gluing

Place waxed paper or plastic under box to prevent glue from sticking to the work surface. Glue sides to ends and clamp until dry. Glue bottom piece in place. Set box on a flat surface and press bottom and sides down to assure a flush fit.

Drilling

Drill holes for pegs in underside of lid as depicted in pattern. These holes should be ¼" deep and a few thousandths of an inch wider than the pegs. Drill same size holes ½" deep and spaced according to pattern in the two small blocks that will serve as peg holders.

Assembling

Attach top to sides with hinges. Sand all outside surfaces flush, then sand with graduated sizes or garnet paper. Attach latch. Glue felt to the bottom of the box as desired to protect your furniture.

Finishing

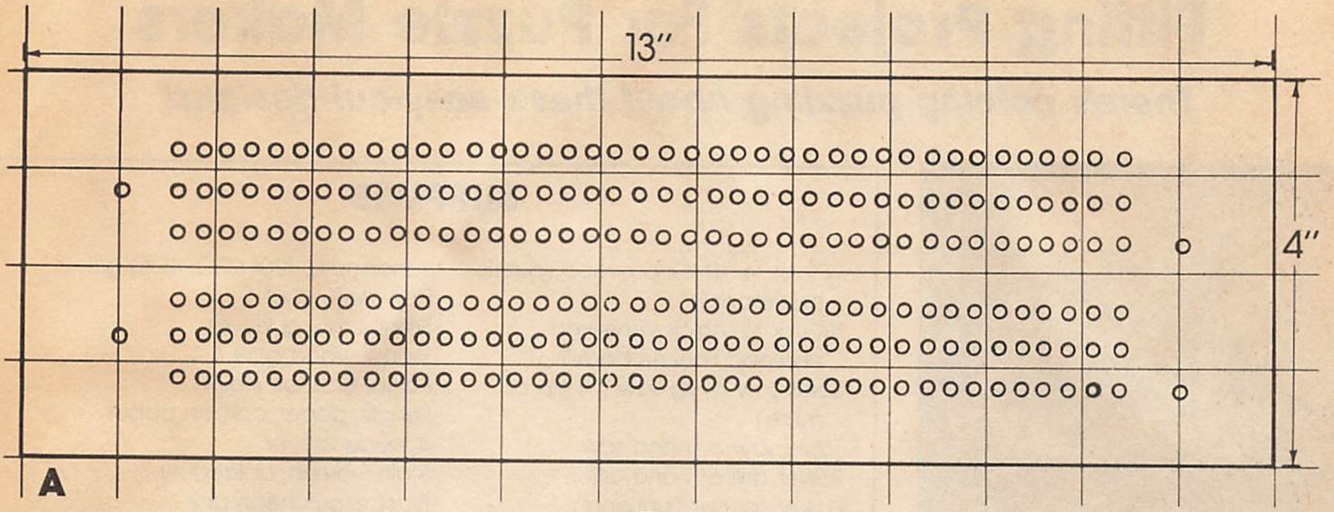
Apply first coat of varnish, allow to dry, and sand with 220-garnet paper. Apply two or more additional coats of varnish, allowing to dry and sanding after all but the final coat. Cut ⅝"-long pegs from ⅛" dowel rod. Color pegs with magic markers.

BILL OF MATERIALS

Part	Description	Size in inches	Quantity
A	Top	⅜ x 4 x 13	1
B	Bottom	⅜ x 2¾ x 12½	1
C	Sides	⅜ x 1⅜ x 13	2
D	Ends	⅜ x 1⅜ x 2¾	2
E	Peg holders	⅜ x 1 x 2¾	2
F	Dowel rod	⅛	1
G	Brass hinges	small	2
H	Brass latch	small	1

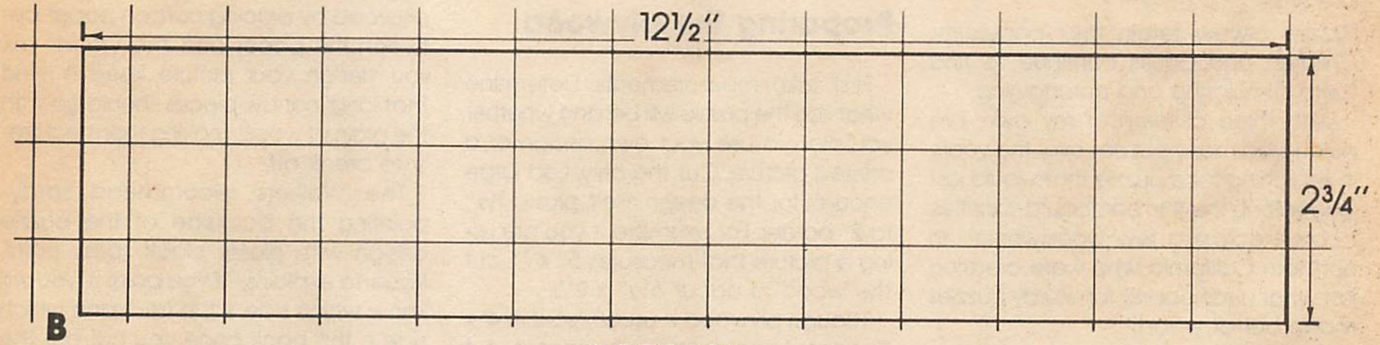
Cribbage Board Patterns

1 square = 1 square inch



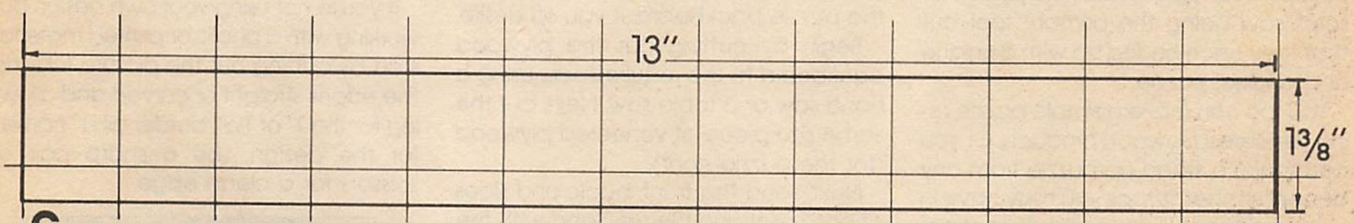
A

Top



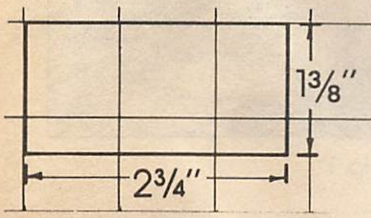
B

BOTTOM

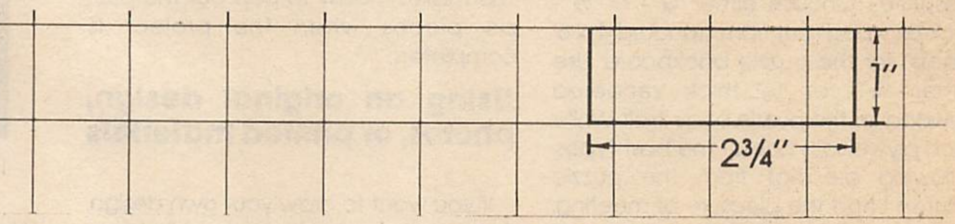


C

SIDE–make two



D END–make two

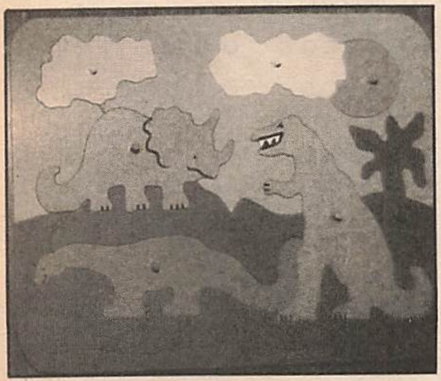


E PEG HOLDER–make two

Mastering Techniques

Fitting Projects For Puzzle Makers

There's nothing puzzling about these easy-cut designs!



Puzzle designs by Paula Levine

by Deborah Upshaw

Puzzles always retain their popularity. Children and adults continue to find them stimulating and entertaining.

With three children of my own, I've purchased many puzzles over the years. In searching for a puzzle that would last longer than the thin cardboard varieties, I came across a few woodworkers in northern California who were creating just what I was looking for–sturdy puzzles made out of wood.

After talking with Paula Levine, Mary Porter, and John and Roberta Walker, I found that their methods of making puzzles were very similar–the jig saw or scroll saw being the primary tool–but that they each ended up with a unique and original puzzle.

You too can make a simple puzzle using veneered plywood products. Or you can make a stand-up puzzle from any decent lumber scraps you may have in your workshop–1" x 6" or 1" x 8" sections are ideal.

In this article, we will focus on the standard one-layer puzzle, which is made from plywood (but you could use masonite). Choose either ¼"- or ½"-thick plywood (cut from standard 4' x 8' sheets) for the puzzle backboard. Use either ¼"- or ⅛"-thick veneered plywood for the puzzle body itself. White birch plywood is one of the best types. Following are tips from the puzzle masters I had the pleasure of meeting. I'm sure their tips will make your puzzle project a success.

SUPPLIES

- ¼"- or ½"-thick plywood (puzzle backboard)
- ¼"- or ½"-thick veneered plywood (puzzle body)
- Scroll saw or jig saw (⅓ hp or more)
- Table saw or hand saw
- Power drill or hand drill
- Power sander (optional)
- Sandpaper: 120, 220, 400 grit
- Fine steel wool
- Small carving knives
- Yellow wood glue
- Paints, brushes, stains
- Pencils, paper, carbon paper
- 4"-wide brayer
- Stain, varnish, or lacquer
- Brass escutcheon pins

INSTRUCTIONS

Preparing the plywood

First take measurements. Determine what size the puzzle will be, and whether you plan to use your own design or a printed picture. Cut the plywood large enough for the design itself, plus a 1½" to 2" border. For example, if you are using a picture that measures 5" x 7", cut the wood to about 6½" x 8½".

Though plywood is usually sold in 4' x 8' sheets, lumber yards will generally cut it into smaller sections if you have to transport the wood home by car. You can purchase shop-grade plywood for the puzzle backboard, if you so desire.

Begin by cutting out the plywood backboard to the required size, using a hand saw or a table saw. Next, cut the same size piece of veneered plywood (for the puzzle front).

Next, sand the front, back, and sides of both plywood pieces. Sand with the grain, using a medium-grit sandpaper. Sand by hand or use a power sander.

Next, drill a hole in the puzzle backboard, about the size of a dime. This makes it easy to pop out the puzzle pieces when the project is completed.

Using an original design, photos, or printed materials

If you want to draw your own design, first sketch your idea on paper, keeping in mind that a 1½" border should surround the design. Once the design is finalized, transfer it onto the veneered plywood by placing carbon paper between the paper and the wood. As you design your picture, keep in mind that long, narrow pieces should go with the grain of wood, making them less likely to break off.

The Walkers recommend spray-painting the backside of the puzzle design with glossy black spray paint. Roberta explains, "If you paint it, you will know which side is the front and which side is the back once you cut out the pieces. Let the paint dry thoroughly overnight before cutting out the puzzle on the jig saw."

If you're not using your own design but working with a photo or printed material, start by cutting out the picture, leaving the edges straight or curved and allowing for the 1" or 1½" border as a "frame" for the design. Use a sharp pair of scissors for a clean edge.

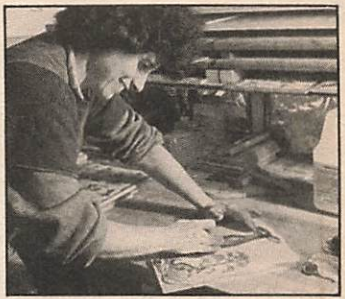


Fig. 1

Next, glue the picture onto the veneered plywood **(fig. 1).** Then take a brayer and roll out any air bubbles (**fig. 2**) that may have formed when you pasted the picture onto the surface of the wood.

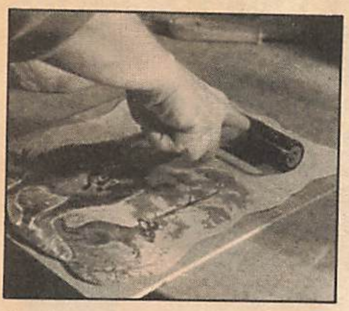


Fig. 2

You can experiment with decoupage glues, but Paula Levine (who tried several different products) recommends using Fuller O'Brien clear laytex finish *as a glue*. "I found it works well as an adhesive and a finish. And it's non-toxic and produces no fumes," Paula adds.

You can use almost any picture for your puzzle. Paula has made thousands of puzzles using all kinds of discarded printed materials. "I've used pages from old books, prints, calendars, vintage postcards, even wallpaper. I call these my 'recycled' designs," Paula says.

Once you have finished gluing your picture onto wood, let the glue dry overnight.

Cutting out the pieces

To cut out the puzzle pieces, start by cutting out the border of the puzzle. With your jig saw or scroll saw, make an entry cut along one bottom corner of the puzzle. Cut the border all around back to the starting point, keeping it 1" to 1½" from the edge. Make a straight or curved line as you cut.

Next, cut out individual puzzle pieces (**fig. 3**) with your jig saw or scroll saw (a thin blade works best). The shapes you cut are up to you; however, large pieces are most suitable for toddlers while older children will find small, intricate pieces more of a challenge (**fig. 4**).

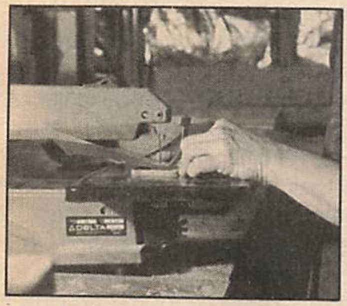


Fig. 3

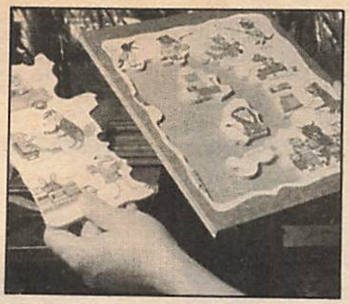


Fig. 4

Now you can glue the puzzle frame to the plywood backboard. Use yellow wood glue. The Walkers reinforce the puzzle frame to the backboard by nailing brass escutcheon pins all around, spaced 1" to 2" apart.

Following this, take the individual puzzle pieces and sand them along the edges to remove any rough spots.

Before mentioning the finishing techniques, let me deviate from the standard one-layer puzzle to show you what's involved in making a slightly different kind of puzzle–the stand-up puzzle.

Making a stand-up puzzle

There are many types of wood you can choose for this kind of puzzle–redwood, pine, birch, cedar. Use what you may already have on hand and select 1" x 6" or 1" x 8" pieces.

Mary Porter finds this type of puzzle quite easy to make (**figs. 5,6**). "I simply draw my design onto the wood and go straight to work on the jig saw where I cut it out piece by piece," she says. "Then I use small carving knives to clean out small corners or curves."

Fig. 5

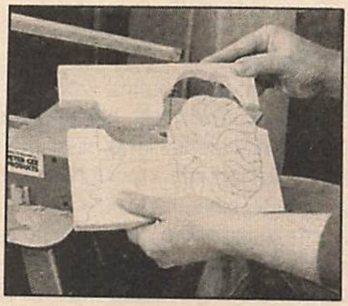


Fig. 6

Mary uses kiln-dried basswood. She adds special details on the wood surface with felt-tip pens, carving knives, or woodburning tools.

The following finishing steps apply to a standard one-layer puzzle as well as a stand-up puzzle.

Finishing the puzzle

If you are working with your own design, you can either stain the wood, leave a natural oil finish, or paint and varnish the surface.

The Walkers prefer water color paints (**fig. 7**). They taught themselves how to properly blend colors by practicing on many scraps of wood.

Fig. 7

"Buy a good set of sable brushes and be ready to use lots of water," Roberta explains. "Start with the whites and light colors first, then gradually add the bold colors later. We like using Dr. Martin's Transparent Water Colors because we find they take on a nice varnish finish."

The Walkers finish their puzzles with a high-gloss marine varnish; but before they apply it, they first apply a sanding sealer.

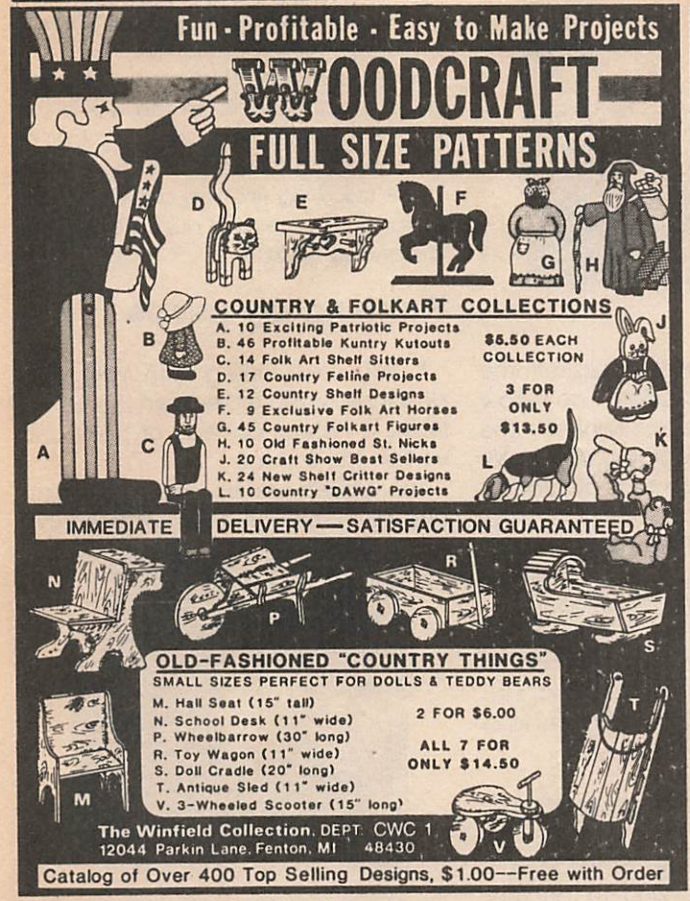
You too should apply a coat of sanding sealer before adding the final coats of lacquer or varnish. After the sealer dries, sand over the entire puzzle surface with a well-worn piece of 120-grit sandpaper.

Next, apply the first coat of varnish and let it dry overnight. The following day, sand with 400-grit sandpaper, or use fine steel wool to smooth the surface. Apply a second, final coat of varnish for a lustrous finish.

If you are working with printed material for your puzzle, the next step is to apply a lacquer or varnish finish. Use

Continued on page 62

Buyers' Guide


Fun - Profitable - Easy to Make Projects

WOODCRAFT

FULL SIZE PATTERNS

COUNTRY & FOLKART COLLECTIONS

A. 10 Exciting Patriotic Projects
B. 46 Profitable Kuntry Kutouts
C. 14 Folk Art Shelf Sitters
D. 17 Country Feline Projects
E. 12 Country Shelf Designs
F. 9 Exclusive Folk Art Horses
G. 45 Country Folkart Figures
H. 10 Old Fashioned St. Nicks
J. 20 Craft Show Best Sellers
K. 24 New Shelf Critter Designs
L. 10 Country "DAWG" Projects

$5.50 EACH COLLECTION

3 FOR ONLY $13.50

IMMEDIATE DELIVERY — SATISFACTION GUARANTEED

OLD-FASHIONED "COUNTRY THINGS"

SMALL SIZES PERFECT FOR DOLLS & TEDDY BEARS

M. Hall Seat (15" tall)
N. School Desk (11" wide)
P. Wheelbarrow (30" long)
R. Toy Wagon (11" wide)
S. Doll Cradle (20" long)
T. Antique Sled (11" wide)
V. 3-Wheeled Scooter (15" long)

2 FOR $6.00

ALL 7 FOR ONLY $14.50

The Winfield Collection, DEPT. CWC 1
12044 Parkin Lane, Fenton, MI 48430

Catalog of Over 400 Top Selling Designs, $1.00--Free with Order

HIGH QUALITY CRAFT SUPPLIES
TRY ELOXITE'S:

JEWELRY
Neckchains, earposts, pendants, tie tacks, and much much more!

CLOCKS
Mini quartz movements, wood clock blanks, high gloss epoxy coatings.

CUT STONES
Genuine and synthetic faceted stones. Highly polished oval cabochons in many types of semi-precious stones.

BELT BUCKLES
For coins or stones. Dozens of styles and finishes at unbeatable prices.

BEADING SUPPLIES
Gemstone beads, chips, and all the supplies you need for beading.

Send 25¢ for your wholesale catalog to:
Eloxite Corporation
806A Tenth St.
Wheatland, Wyoming 82201

FAST SERVICE! WHOLESALE PRICES!

Mastering Techniques

Continued from page 61

a 3" bristle brush and apply a thin coat over the entire puzzle picture and border. Apply sparingly so thick drops won't seep into joints.

Paula Levine uses Fuller O'Brien clear latex finish and finds it is best because "it produces a clear, smooth surface and easily dries overnight."

After the first coat of finish has dried, lightly sand away rough spots with 400 grit sandpaper or steel wool. Next, apply a second, final coat of finish. Once this dries, your puzzle is finished.

To display your puzzle on a wall, attach a sawtooth hanger on the top back of the puzzle. Glue a wooden wedge–a spacer about 2" long and ¾" thick–to the bottom back of the puzzle. The puzzle will balance nicely in place.

Puzzle making is their pastime

Paula Levine

Paula began making wooden toys, but soon focused her talents in the art of puzzle making, her favorite pastime.

In a short time, Paula set up a cottage industry making puzzles for profit from her McKinleyville, California, home. She named her company, Peter Forest Puzzles, after her two sons.

Paula uses a Delta scroll saw which she finds holds a 90° angle exceptionally well, thereby allowing her to use heavier woods.

"I'm experimenting with making two- and three-level puzzles, using contrasting wood colors as part of the design," she says, "and I'm always trying something new."

Mary Porter

Mary creates beautiful wooden toys and puzzles from her home located deep in the woods in the northern part of Humboldt county–about twenty miles east of Blue Lake, California.

Situated many miles from electric power lines, the Porter family relies on a small portable generator to run some household appliances. Mary makes use of a *foot-powered* treadle jig saw for her woodwork. Her favorite projects are toys and puzzles.

She began creating by adapting other puzzle designs she found in books and magazines. Soon she was making her own designs of the animal subjects that children love.

John and Roberta Walker

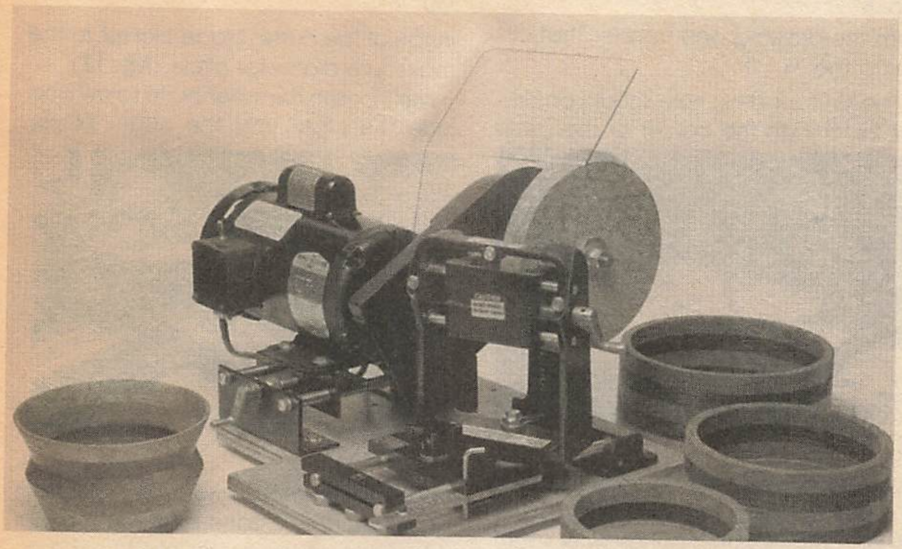
Puzzle making has brought a measure of modest financial success to woodworkers John and Roberta Walker, allowing them the freedom to work from their home in Arcata, California, where they raise their young daughter, Genevieve.

They hand-paint and finish their puzzles at a large work table in their home; the jig saw work, sanding, and gluing is done in a roomy garage they have converted into a wood shop.

Their exceptional water color painting reflects their talent and professional art training. They spend equal time designing and painting the puzzles.

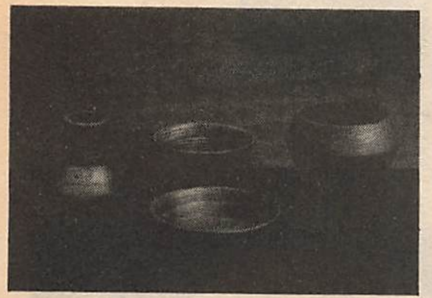
Mastering "The Ring Master"

Experience the fun and satisfaction of turning out an artistic bowl by simply "stacking rings."



by George R. Mott

The Ring Master experience is your opportunity to discover an entirely new way to make creative bowls and vases more easily and inexpensively than you may imagine.



Ring Master Projects

The simplest objects are made by cutting rings from flat boards then stacking and gluing them together, forming conical shapes.

Figure 1 shows the Ring Master attached to a lathe. It is clamped to the bed, and a slab of ¾" wood is attached to the spindle. As the wood spins, narrow cutter blades cut the wood into rings. **Figure 2** presents a closer view. The wood has been cut into a roughly octagonal shape and marked with a compass where the circular cut is to be made.

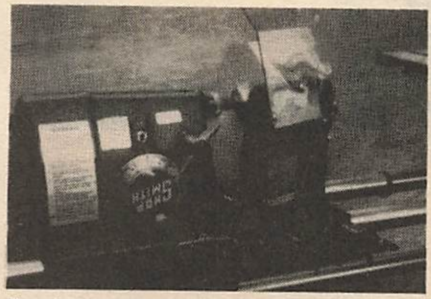


Fig. 1

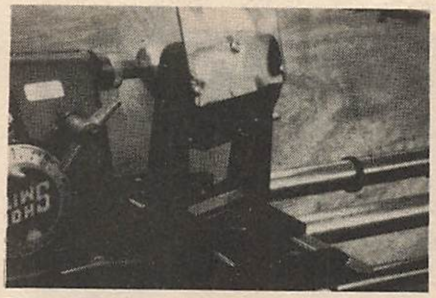


Fig. 2

From the back of the Ring Master, the two cutter blades can be seen in **Figure 3.** They are mounted on a rotating yoke and can be advanced in either direction by turning the hand crank. Turning the yoke and locking it into position with the screw at the bottom enables a cut to be made at any angle with respect to the plane of the wood surface. The narrow cutter blades can be adjusted independently to change their spacing (**fig. 4**), and a straightedge placed against them while locking them ensures they are lined up accurately.

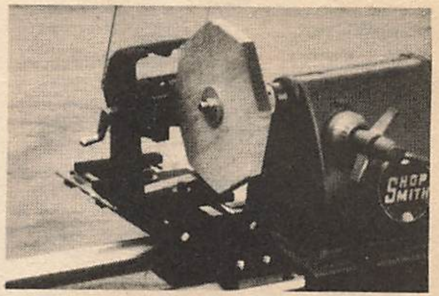


Fig. 3

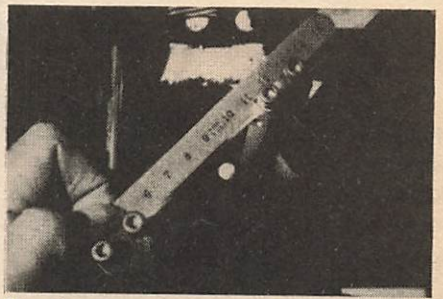


Fig. 4

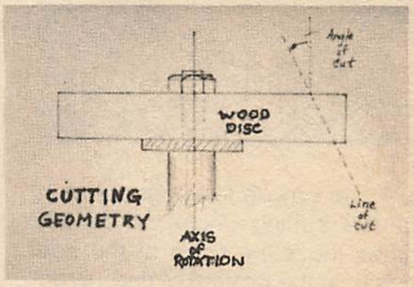


Fig. 5

Now let's look at the geometry of the cutting operation (**fig. 5**). The wood disc

Continued on page 64

Continued from page 63

has a ½"-diameter hole in the center and is mounted on the spindle. The dotted line, at an angle to the wood surface, is the line of the cut which can be set by rotating the yoke. If we make several cuts in sequence, and if the proper yoke angle is set, you can see that the flat upper part of ring 1 exactly matches the flat lower part of ring 2, and so on. This is known as "stacking rings" (**fig. 6**) and allows you to make conical bowls without wasting any wood, except for the tiny amount removed by the cutters. You can also see that the cutting angle will depend on the wood thickness to obtain "stacking rings."

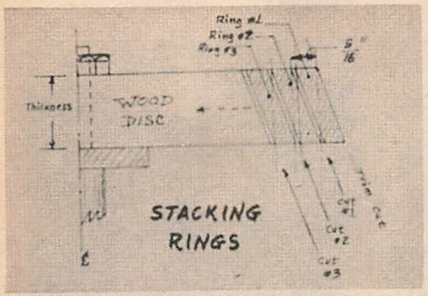


Fig. 6

Below is a chart noting the relationship between wood thickness and cutting angles:

Conditions For Ring Stacking
(for 5⁄16" advance)

Wood Thickness In Inches	Angle Of Cut In Degrees
¾	22½
½	32
¼	51

Now we can go through the steps of making a simple bowl with the Ring Master. You may first want to make a simple cross-section drawing of the bowl (**Fig. 7**). Let's make five rings out of ¾" stock–the cutting angle will be 22½ degrees; that's the slope of the sides. Notice how the bottom of ring 1 exactly matches the top of ring 2 and so on. Note the ½" mounting hole at the bottom. Measure the maximum diameter on your drawing. With an ordinary pencil compass, set the opening of the points to the radius of the maximum diameter (**fig. 8**). Take the setting right from the drawing and transfer that circle to the ¾" stock.

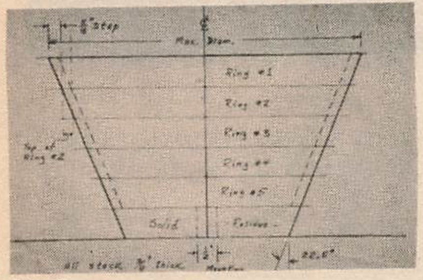


Fig. 7

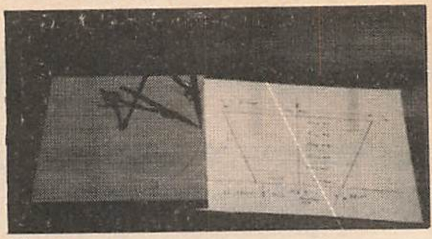


Fig. 8

The ½" mounting hole should be drilled exactly on the center of the circle using a drill press (**fig. 9**). If your stock is in a square piece, it's a good idea to cut off the corners with a bandsaw or saber saw (**fig. 10**) so that the corners don't interfere with the frame of the Ring Master.

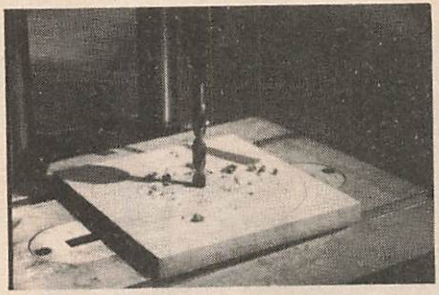


Fig. 9

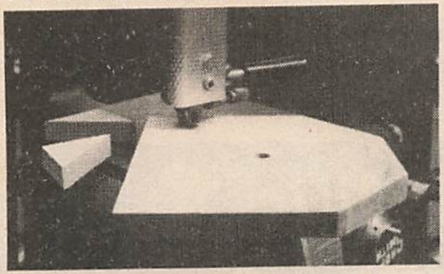


Fig. 10

The cutting angle of 22½ degrees is set using the blue angle scale on the yoke of the Ring Master or, for better accuracy, a 180 degree protractor can be used, reading it against the edge of the frame (**fig. 11**). Set the index pin to the hole of the index plate that brings the inside of the cutter blade closest to the maximum-diameter circle (**fig. 12**).

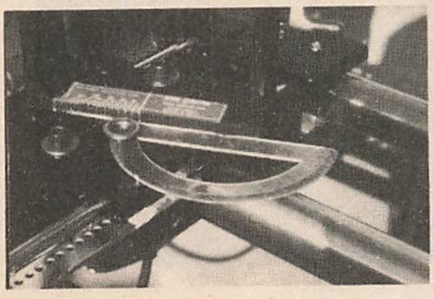


Fig. 11

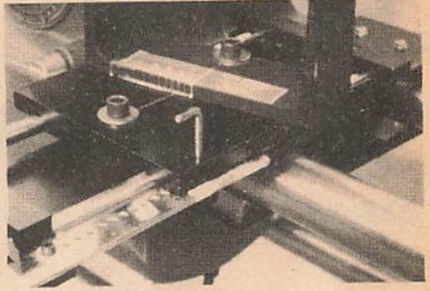


Fig. 12

Next, loosen the index plate screw and slide the plate until the cutter blade edge lines up exactly with the circle (**fig. 13**). When this is done properly, the inside edge of the cutter blade will line up exactly with the circle, and you are ready to begin cutting (**fig. 14**).

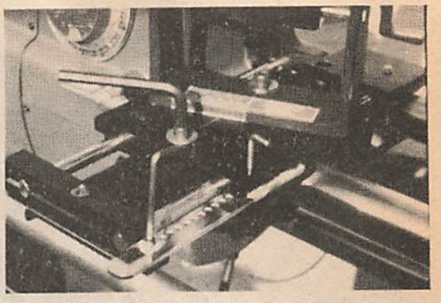


Fig. 13

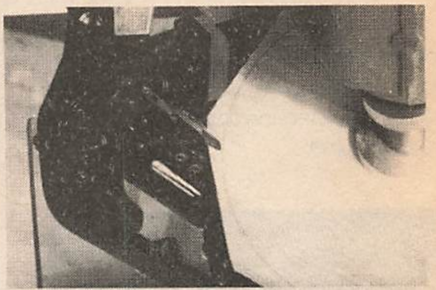


Fig. 14

Continue the reverse cranking until the outside cutter begins to cut; keep going until the two cuts meet, and the waste stock falls away (**fig. 15**). Now turn the motor off. The cuts are made this way so that no cutter breaks through the surface, raising fibers and destroying

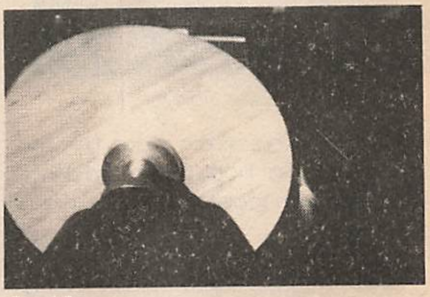


Fig. 15

the surface of a ring. The cut is clean and the waste has been removed. To cut off the first ring, remove the index pin and move the carriage forward until the pin can be placed in the next hole (**fig. 16**). This indexing scheme makes it possible to have all the rings of equal thickness.

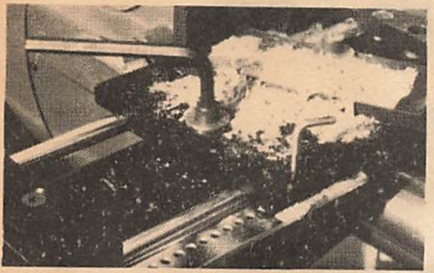


Fig. 16

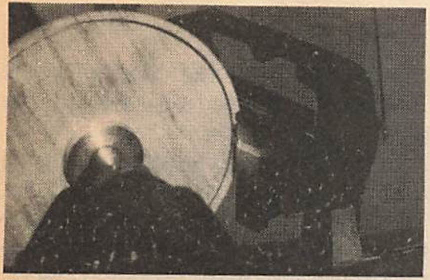


Fig. 17

Advancing the carriage to the next hole moves the cutters toward the center of rotation by a fixed amount, and the first ring can now be cut off. Cut about halfway through with the inner cutter, then back it out (**fig. 17**). Now reverse and make the outside cut. Wher the two cuts meet, the first ring falls of (**fig. 18**).

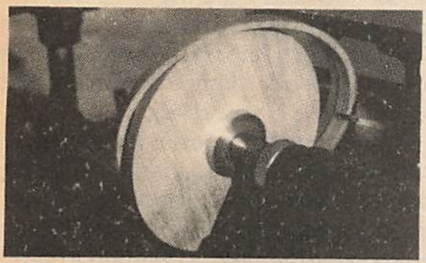


Fig. 18

Now just continue this process, cutting off the second, third, fourth, and fifth rings. The stock that's left becomes the base of the bowl.

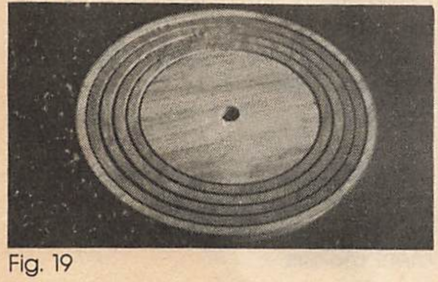


Fig. 19

It's interesting to re-assemble all the rings and the base in their original relationship. With the exception of the outside of the wooden square, notice how little has been wasted in the cutting steps (**fig. 19**). Before the rings are glued together, it's a good idea to sand their top and bottom surfaces lightly to remove any fibers that could interfere with a close fit between the rings. The sandpaper is fastened to a flat board with glue or contact cement (**fig. 20**).

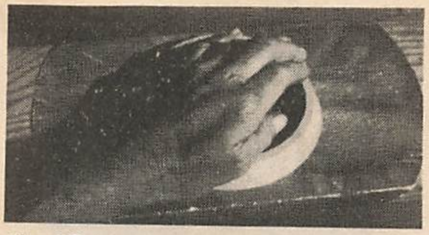


Fig. 20

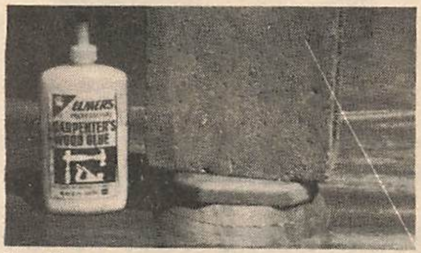


Fig. 21

In **Figure 21,** the first two rings, number 1 the largest and number 2 the next largest, have been assembled, using a thin, uniform layer of yellow woodworking glue on each one. A weight of about ten pounds will create enough pressure for a snug fit (you might use a cement block). Be sure the rings don't slip before the glue grabs. After five minutes, add ring 3 to rings 1 and 2; hold them together until the new glue layer is firm. Continue in this way until all five rings have been assembled, then add the bottom disc. After a drying time of about six to eight hours, the bowl is complete. The bowl is now mounted on the spindle for sanding (**fig. 22**).

Handheld sand paper will smooth the inner and outer surfaces and remove any excess glue that has squeezed out.

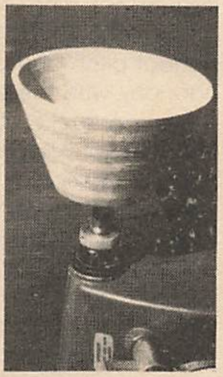


Fig. 22

Use several grades of sandpaper, finishing up with grits as fine as 180 or, preferably, 220.

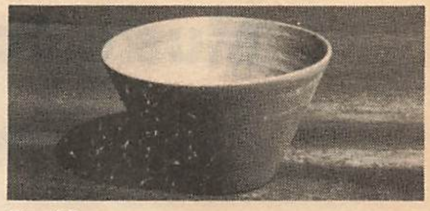


Fig. 23

After sanding, the bowl surfaces are smooth and the wood has a satin sheen (**fig. 23**). The wall thickness is about ¼". If you want to fill in the ½" hole in the bottom, either cut a plug from the waste stock with a plug cutter, or purchase readymade flat plugs. Use only a small amount of glue, and tap the plug in place (**fig. 24**). The bowl is now ready to finish.

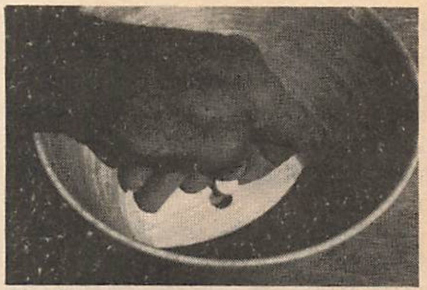


Fig. 24

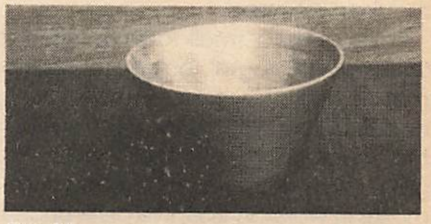


Fig. 25

The finished bowl (**fig. 25**) has received three coats of lacquer, with a fine sanding between coats. There are many finishes with fine results. Use the one you find most pleasing. Many additional projects employing more advanced cuts and exotic wood designs, such as those seen in **Figure 26,** can be easily made using the Ring Master.

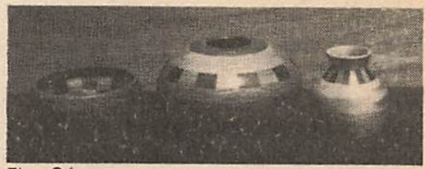


Fig. 26

For more information about the Ring Master, please see our Source of Supply list on page 70.

Woodworker Profile

Music To A Woodworker's Ears

Meet Joe Hugill, Violinmaker

by William Lowry

A musician touches bow to string and beautiful music flows from a piece of finely-crafted maple. This is no accident, but the result of hundreds of hours of skilled labor that has created a miracle of sound.

We delight in the haunting tones of the violin, viola, and cello, little knowing the time and skill that goes into the production of the small, hollow piece of wood that charms our ears–an instrument that renders the enchanting sounds of waltzes by Strauss and reels by Virginia fiddlers.

In Seaforth, a small town in eastern Ontario, Joe Hughill realized a dream that he had pursued for years, making beautiful-sounding violins. His ancestors, too, were good with their hands. His great uncle was an accomplished violinmaker in Wales. In 1838, five of his uncles sailed from the old country for Canada. On the way, their ship sank off the coast of Newfoundland. Two uncles were lost, but the remaining three came to Ontario and settled as farmers in the county of Perth. Five other uncles left Wales for New Zealand and were never heard of again. They are probably making music for the Maori.

Joe was a farmer originally; but as his family grew, he entered the construction business and started his own company in 1945. His interest in violins began as a hobby, when Uncle William gave him his first violin pattern. He carved four instruments before he was twenty years old. Family and business kept him away from his hobby for many years, but he continued to study everything available on the theory and construction of violins.

Joe Hugill in his workshop.

'We delight in the haunting tones of the violin...little knowing the time and skill that goes into the production'.

Joe began to put his book learning to work in 1954 when his Great Uncle passed away and his patterns and chisels were handed down to Joe. Joe's next violin wasn't completed until 1974, but since then he has created twenty-nine instruments and repaired countless others. Although not a musician, Joe has perfect pitch and can tune a violin in harmony with the tuning fork.

The construction of a violin takes over 250 hours of skilled labor. After 45 to 50 hours of work on a new piece of wood, Joe does a "tap tone" test. If the wood gives off a B sharp when rapped, it will be an excellent instrument; if the tone is B flat, it could be only average. Some violin backs are carved from a single piece of wood, but the majority are made of two matched halves cut from a single wedge-shaped block of wood. The grain is matched and the pieces are glued together, producing a mirror-image pattern. The wedge is chiseled and carved to an exact thickness dictated by the "historical" charts that have been in Joe's family for generations. The belly must also be made in two pieces, to complement the vibrations of the back.

Violin backs, ribs, and necks are constructed of maple, curly maple being one of the best woods. The tops are generally of sitka spruce. All wood is well-seasoned and naturally air-dried. The drying time of good material varies from 16 to 35 years! Finding the proper piece of wood for each instrument entails a lot of painstaking searching.

The wonderful tones of a Stradivarius violin are revered throughout the world; the designer's genius and craft is well-recognized. The success of Stradivarius is largely attributed to the wood used in the construction of the instrument. One theory holds that the wood used to make this special type of violin was first soaked in salt water for many years before construction could begin. The salt water may have built up a type of fungi on the wood cells that contributed to the production of the violin's incredible sound.

A violin's price is determined by its tone. The Heinl Co. in Toronto has indicated to Joe that they get little call for cheap violins, but they can sell as many "$10,000" instruments as he can produce. It's refreshing to know that quality is still a criterion for today's instrument makers.

New Product Report

In the world of mini tools, these two items are big on features!

A compelling compact

The Dremel scroll saw/sander makes precise scroll cuts and sands wood, metal, plastic and other materials for a variety of do-it-yourself and hobbyist projects.

Features include rugged steel construction and 15" throat depth that will handle material up to 1⅝" thick, but works best on wood 1" or less. The compact model No. 571 produces quality results for projects without the need for great amounts of storage space or a large work area.

With its front-or-side mount blade, the Dremel scroll saw can also cut light-gauge metal, plastic, felt, and styrofoam. The saw includes a rubber backing pad and adaptor for the integrated disc sander, three sanding discs, and three saw blades.

Available attachments and accessories include a flexible-shaft accessory set, buffing wheel, saw blades, sanding discs, adaptors, collets, and more. For more information, contact Dremel, 4915 21st Street, Racine, WI 53406-9989.

Pocket plane takes off

The Kunz pocket plane is compact enough to fit in the palm of an average-sized hand. The easy-to-handle size gives woodworkers and cabinet makers optimal control over the tool. Excellent for general purpose woodworking, the Kunz pocket plane is especially useful when a block plane would be too large and cumbersome.

If you enjoy making models with small pieces of wood, you'll find the Kunz pocket plane a big help. Trimming excess veneer in a straight line flush to panel edges is also easier with the pocket plane. The plane comes equipped with a blade that can be resharpened.

For more information, please ask for The Woodworkers' Store catalog ($1.00), which offers the Kunz plane (and an extensive selection of products, including hardwoods, veneers, wood parts, finishing supplies, tools, books, plans, and more) by writing to The Woodworkers' Store, 21801 Industrial Boulevard, Rogers, MN 55374 (612) 428-4101.

In Our Next Issue...

- Create a Cradle
- Build a Book Case
- Fast Furniture
- Unique Woodturnings
- Kitchen Accessories
- Sensational Swan
- Terrific Toys
- Scroll Saw Report
- Woodworking Tips
- Finishing Techniques

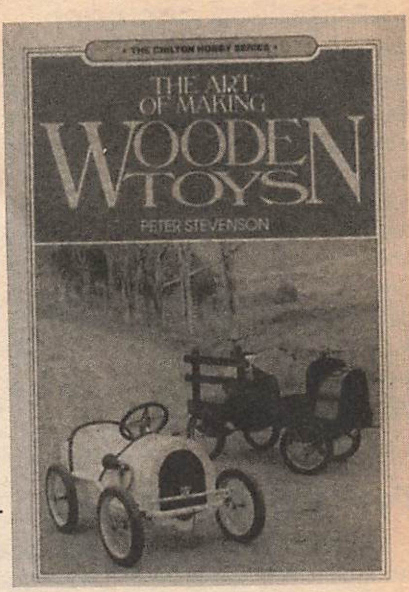
DOMESTIC & FOREIGN
HARDWOODS
Quality stock for Cabinet Work
Most all sizes from 1" to 4" in thickness
HARDWOODS
ASH—BASSWOOD—BIRCH
BUTTERNUT—CHERRY
CHESTNUT—EBONY—MAPLE
OAK—POPLAR—ROSEWOOD
TEAK—WALNUT
Also hardwood plywoods
SOFTWOODS
SUGAR PINE—CYPRESS—CEDAR
SPRUCE—DOUGLAS FIR etc.
MAURICE L. CONDON CO., INC.
256 Ferris Ave., White Plains, NY 10603
914-946-4111
Monday through Friday 8 AM to 4:30 PM

WOODWORKER'S
CATALOG
There are over
4,000 money-saving
reasons why
woodworkers rely
on Constantine.
4,000 woodwork items—
to help you Build-Restore-Repair-Refinish! Over 200 different woods . . . 150 veneers . . . 500 plans . . . cabinet hardware . . . 96 How-To Books . . . 118 carving tools and chisels . . . 76 inlay designs . . .and lots more for One-Stop, Right-Price Shopping without leaving home!
116 Page Catalog-Only $1.00
CONSTANTINE Est. 1812
2050 CW Eastchester Road, Bronx, NY 10461

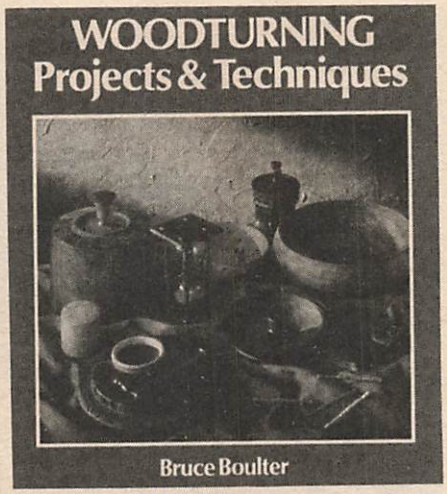
The Book Case

Our editor's choice of books both new and noteworthy.

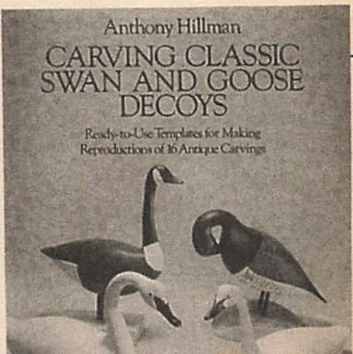
The Art of Making Wooden Toys, by Peter Stevenson. While this book is loaded with charming and challenging toymaking projects and patterns, we also appreciate the author's enlightening approach to woodworking. According to Stevenson, "fascinating toys have a subtle quality of design–something that prolongs the attraction of the toy after the novelty has worn off. These classic toys have just enough detail to capture the concept of a chariot, soldier, or moon-crawler and just enough realism to set our imaginations in gear, but not stifle them with super detail." Stevenson puts his theory into practice. "Because the superbright colors (of today's commercial toys) remind us of the vividness of perception during childhood," he says, "is no proof that kids go for them." Stevenson tells us, "I let kids pick the colors for the toys I make, and the combinations turn out to be quieter than those I would have chosen. To test this theory, I repainted a truck in the glaring colors that catch adult eyes. Not only did the truck look shabby to the youngster, but it was banished from play until the old browns, tans, and blacks were reinstated." *The Art of Making Wooden Toys* covers topics from design to setting up shop to construction of toys. Projects include plans for everything from a cradle to a castle to a pedal racer. This book offers a refreshing look at toymaking that will keep you entertained and woodworking for months to come. *Paperback, 247 pages, b&w and color, $14.95, Chilton Book Company, Chilton Way, Radnor, PA 19089.*



Woodturning Projects & Techniques, by Bruce Boulter. Internationally admired and imitated as one of today's most inventive woodturners, Boulter is also an author and a skillful teacher who has created a book implementing the experiences, problems, and suggestions that have arisen from his readers and pupils. The author introduces an exciting array of original woodturning projects and techniques. Dozens of projects include bracelets, bowls and bottles that hold water, cheeseboards, peppermills, frames, lamp bases, and the very popular lace bobbin, along with a variety of small projects utilizing rare and exotic woods for little cost. Over 450 close-up photos and many diagrams with step-by-step captions and thorough, no-nonsense explanations make this book an able tutor for experienced and novice woodworkers eager to expand their practical knowledge and hone their woodturning skills. Everything a woodturner needs to know or be reminded of is here, including a lot that other books neglect, such as ways to mix woods for laminating, making the most of wet or dry wood, enclosing a bottle inside a turned project, turning bone on a lathe, post blocking for "putting a bottom on," and the latest information on lathe accessories. Boulter also provides safety tips that are essential when working with woodturning equipment and attempting more complex woodturning techniques. Chances are good that you will turn to this book over and over again as a solid reference book and sensational design workbook. *Paperback, 140 pages, b&w, $14.95, Sterling Publishing Company, Two Park Avenue, New York, NY 10016.*



Carving Classic Swan And Goose Decoys, by Anthony Hillman. Sixteen ready-to-use templates for creating reproductions of antique carvings make this a fine guidebook for beginning woodcarvers. Instructions for carving decoys include making lifelike replicas of tundra swans, five varieties of Canada geese, and more classic game birds. Hillman, a wildlife illustrator as well as an accomplished woodcarver, provides double-page templates that can be used directly or mounted and preserved for repeated use. Directions include helpful hints on cutting and shaping the body as well as sanding, painting, and finishing the decoys. Profile patterns can also be used to create carved or painted plaques. Now you can learn a traditional woodworking technique quickly and easily–and in a short time carve some remarkably artistic pieces for your den or gift-giving. *Paperback, 72 pages, b&w and color, $5.95, Dover Publications, 31 East 2nd Street, Mineola, NY 11501.*


Anthony Hillman
CARVING CLASSIC SWAN AND GOOSE DECOYS
Ready-to-Use Templates for Making Reproductions of 16 Antique Carvings

Now! For Readers of This Magazine...

GREAT VITAMIN SALE

. . . to quickly introduce you to savings on high quality vitamins when you order by mail from Nutrition Headquarters! We are making 10 extra special coupon offers with other products at our regular low prices. But act today. Sale ends June 15, 1989.

ORGANIC MINERALS · NATURAL VITAMINS · HIGH POTENCIES

FREE WITH EVERY ORDER

FREE! WITH EVERY ORDER

PRECISION WATCH CALCULATOR

- A Calculator
- A Calendar Watch
- A Wrist Alarm

A $25 VALUE!

This fine Watch Calculator is more than the equal of Calculator Watches selling for up to $25 . . . and it's yours FREE. Slim, handsome and so light you'll almost forget you're wearing it. It's both: 1. A Digital Calendar Watch and Timer with a distinctive sounding alarm. 2. A super accurate, 4-function calculator that adds, subtracts, multiplies and divides. Features a large, easy-to-read, lighted display and rugged, sporty adjustable band. *Makes a wonderful gift.* To get yours, just check the box in the order form, add $1.75 for shipping, return it with your order and we'll send your Precision Calculator Chronograph FREE!

Free Offer Ends June 15, 1989
May never be repeated!

Enclose Coupons Below With Order

MAIL ORDER COUPON
VITAMIN E 400 Unit Capsules
☐ MONTH'S SUPPLY **49¢** Limit One of Any Size to a Family
☐ 100 for 1.49
☐ 500 for 7.25
☐ 1000 for 14.29
N602 Expires 6/15/89

MAIL ORDER COUPON
500 MG. **VITAMIN C** WITH ROSE HIPS
☐ 100 for **87¢**
☐ 500 for 3.99
☐ 1000 for 7.19
Limit One of Any Size to a Family
N602 Expires 6/15/89

MAIL ORDER COUPON
CALCIUM MAGNESIUM and ZINC
Now the Minerals needed for healthy Nerves, Teeth, Bones, Muscles, Blood and Healing all in one Tablet
☐ 100 FOR **88¢**
☐ 300 for 2.39
☐ 600 for 4.49
Limit One of Any Size to a Family
N602 Expires 6/15/89

FISH OIL Capsules *Compare Our Prices*

"MaxEPA®" 1,000 MG. FISH OIL
50 FOR 4.49 200 FOR 16.95
100 FOR 8.75 400 FOR 32.00

"GenEPA"™ 1,000 MG. FISH OIL
COMPARE TO MaxEPA® & PROTOCHOL™
100 FOR 5.50 400 FOR 19.50
200 FOR 10.00 800 FOR 35.00

Nutritionists say CUT CHOLESTEROL *with*
OAT BRAN
OAT BRAN TABLETS
100 FOR 1.10
500 FOR 4.75
1000 FOR 8.50

OAT BRAN CEREAL
1 lb.—1.15
3 lbs.—2.90
6 lbs.—8.95

HI-POTENCY
STRESS FORMULA
B Complex and Vitamin C
100 TABS 1.95 250 for 4.75

"BIG 4" Kelp, Vit. B6, Lecithin and Cider Vinegar
100 For 79¢ 500 For 3.50 1000 For 6.49

VITAMIN E FINEST QUALITY—100% PURE ALPHA TOCOPHERYL GELATIN CAPSULES

	100 FOR	500 FOR	1000 FOR
400 UNIT CAPSULES	2.89	14.49	28.49
1000 UNIT CAPSULES	7.89	37.98	69.85

BREWER'S YEAST TABLETS
250 Tablets 95¢
1000 for 2.95

VITAMINS For Hair Care
Same Formula as others charged $9.95 for 50 Day Supply.
NOW
50 DAY SUPPLY 3.95
100 DAY SUPPLY 7.49

"SPECIAL C-500"
500 mg. Vit. C Plus Rose Hips 100 mg. Bioflavonoids 50 mg. Rutin, 25 mg. Hesperidin.
100 Tablets 2.49
500 for 10.98

VITAMIN B6 50 MG
100 for 1.39
500 for 5.50
Higher Potency
100 MG. Tablets
100 for 1.98
500 MG. Tablets
100 for 7.49

PRICES IN THIS AD GOOD UNTIL JUNE 15, 1989

Enclose Coupons Below With Order.

MAIL ORDER COUPON
15 MG. CHELATED **ZINC**
☐ 100 TABS **39¢**
☐ 500-1.89 ☐ 1000-3.49
N602 Expires 6/15/89

MAIL ORDER COUPON
1,000 Mg. **VITAMIN C**
WITH ROSE HIPS
☐ 100 For **1.98**
☐ 500 for 9.49
☐ 1000 for 17.98
Limit One of Any Size to a Family
N602 Expires 6/15/89

MAIL ORDER COUPON
COD LIVER OIL CAPSULES
☐ 100 FOR **1.19**
Limit One of Any Size to a Family
☐ 500 for 5.29
☐ 1000 for 9.88
N602 Expires 6/15/89

MAIL ORDER COUPON
GINSENG
250 mg. Tablets
☐ 100 For **1.49**
Limit One of Any Size to a Family
☐ 500 for 6.95
☐ 1000 for 12.49
N602 Expires 6/15/89

MAIL ORDER COUPON
LECITHIN
19 Grain Capsules
☐ 100 Capsules **1.49**
☐ 300 for 3.98
☐ 600 for 6.85
Limit One of Any Size to a Family
N602 Expires 6/15/89

"CALCIUM 600"
1500 mg. Calcium Carbonate per tablet with Vitamin D to help Calcium absorption providing 600 mg. Calcium per tablet. Same potency as CALTRATE™ 600 which cost 6.84 for 60 tablets. Our prices—
60 TABS. 3.85 120 TABS. 5.50 240 TABS. 9.75

MAIL ORDER COUPON
Garlic Oil Capsules
☐ 100 For **68¢**
☐ 500 for 3.28
☐ 1000 for 6.39
Limit One of Any Size to a Family
N602 Expires 6/15/89

MAIL ORDER COUPON
Our "Top-B" B-Complex "50"
Famous Formula at a Sensational Low Price!
Every capsule contains 50 mg. B1, B2, B6, Niacinamide, Panto Acid, Choline, Inositol, 50mcg. B12, Biotin, 50mg. Paba, 400 mcg. Folic Acid.
☐ 50 for **1.89**
☐ 100 for 3.49
☐ 250 for 7.98
Limit One of Any Size to a Family
N602 Expires 6/15/89

MAIL ORDER COUPON
ALOE VERA JUICE
ALL NATURAL NON-PASTEURIZED COLD STABILIZED PROCESS
Aloe Vera has been known, used, and trusted since the dawn of man's history. The Aloe Vera leaves are hand filleted to insure that all the desirable properties are retained without the Aloin and bitterness.
SUGGESTED USE: Two ounces with each meal.
Quart $2.98 Gallon $9.95
GUARANTEED NO ADDED SUGAR, STARCH, ARTIFICIAL COLORS, OR IMITATION FLAVORS
N602 Expires 6/15/89

HELP CUT YOUR CHOLESTEROL WITH **NIACIN**
ASK YOUR DOCTOR ABOUT THE BENEFITS OF NIACIN!
NEW—TIME RELEASE →

100 MG. NIACIN TABS
100-1.40 250-3.00 500-4.75
250 MG. NIACIN TABS
100-2.75 250-4.80 500-8.50
500 MG. TIME RELEASE NIACIN TABS
100-4.50 250-8.00 500-15.00

Special Low Prices on these **HEALTH FOODS** *For Readers Of This Ad*
COMPARE THESE PRICES WITH THOSE YOU ARE NOW PAYING!

PURE LECITHIN GRANULES—1 lb. for 3.75; 3 lbs. for 10.00
LIQUID COD LIVER OIL—8 oz. for 1.95; 16 oz. for 3.70
500 MG. BEE POLLEN TABLETS—100 for 2.19; 500 for 9.50
500 MG. L-LYSINE—100 for 1.98; 300 for 5.50
500 MG. L-TRYPTOPHANE—30 for 3.99; 60 for 7.50
100 MCG. SELENIUM—100 for 2.98; 250 for 5.75
PRUNE & HERB LAXATIVE CAPSULES—60 for 2.75; 180 for 6.95
25,000 UNIT BETA-CAROTENE—100 for 2.95; 250 for 6.75
50 MG. CHELATED ZINC—100 for 1.79; 500 for 7.25
PAPAYA ENZYME—250 for 1.65; 600 for 2.89
ACTIVATED CHARCOAL CAPSULES—30 for 1.49; 100 for 3.98
VEGETABLE LAXATIVE POWDER—Plain or Orange—14 oz. can 2.98

SAVE UP TO 70% ON OUR FORMULAS

Our Name	*Comparable to*	*100 for*	*500 for*
Thera Min	**Theragran M®**	1.49	7.25
Daily w/Iron	**One-A-Day® with Iron**	89¢	3.75
Ger Iron	**Geritol®**	98¢	4.75
Super Vits & Mins	**Super Plenamins®**	2.29	9.29
Chewable Vitamins	**Chocks®**	1.49	6.25
B with C	**Albee® with C**	1.85	7.50
Oyster Calcium	**Oscal®**	1.49	5.95
Daily Formula	**One-A-Day®**	89¢	3.75
A-Z Tabs	**Centrum®**	130 for 3.69	
Nutradec	**Myadec®**	130 for 3.89	
Stress Plus Zinc	**Stress Tabs 600 Plus Zinc®**	60 for 2.89	
B.E.C. with Zinc	**Z-BEC®**	60 for 2.89	

FIBER-OFF TABLETS Compare and Save
A safe aid to weight Loss!
100 2.49 | 250 5.50 | 500 9.75

VITAMIN A BEAUTY CREAM
2 oz. jar (RETINOL)
6.50 Two 2-oz Jars.— 10.00

BORON AIDS IN ASSIMILATION OF CALCIUM
100 TABS—2.00 250 BATS—3.95

HERBAL DIURETIC	100 Tablets 1.75	500 for 6.50
ALFALFA Tablets	100 Tablets 49¢	500 for 1.95
GRAPEFRUIT DIET PILL	90 for 2.98 200 for 5.00	500 for 9.85
ACIDOPHILUS Capsules	100 for 1.79	500 for 8.75
Super Potency 500 MCG. **VITAMIN B12**	100 Tablets 1.49	500 for 6.25
99 MG. **POTASSIUM TABLETS**	100 Tablets 1.25	500 for 5.00
Multi Minerals **9 VITAL MINERALS**	100 Tablets 1.25	500 for 5.49
VITAMIN A 25,000 Units	100 for 89¢	500 for 4.15

Nutrition Headquarters
Money Saving
MAIL ORDER BLANK

RUSH Your Order Now to

THE BEST TIME TO SAVE IS NOW!
NUTRITION HEADQUARTERS
104 West Jackson St. **N602**
Carbondale, Ill. 62901

List Items you wish here:

QUANTITY	SIZE	NAME OF PRODUCT	TOTAL PRICE
		Shipping charge	$1.50
		Shipping charge for Watch Calculator	$1.75
SATISFACTION GUARANTEED		TOTAL AMOUNT	

MASTER CARD and VISA accepted on orders over $10.00. Please print card number and expiration date on separate piece of paper. We reserve the right to limit quantities.

FREE WATCH CALCULATOR ☐ If you check this box, add $1.75 for shipping and mail your order by June 15, 1989, we will include in your order a FREE Watch Calculator.

PRINT NAME ____________________
ADDRESS ____________________
CITY ____________ STATE ______ ZIP ______

© 1989 NUTRITION HDQS.

Source of Supply

Here's a handy list of sources for tools, plans, and books to help you make the projects featured in this issue and to stimulate ideas for additional projects you will want to create. If you request a product, catalog, or additional information, please include any appropriate payment and/or postage and handling in a legal-sized, self-addressed, stamped envelope (SASE) to speed the materials to you. And if we at *Creative Woodworks* can help you with additional information or sources of supplies, please write to us; we'll be glad to help.

Dremel Tools and Plans

For more information about a full line of convenient and effective compact power tools, including a table saw, disc/belt sander, scroll saw, moto tool, and over two dozen fully-detailed compact power tool project plans, please write to: Dremel, 4915-21st Street, Racine, WI 53406-9989 (414-554-1390).

Marquetry Society of America

Marquetry murals, such as the Swimming Geese picture (Project No. 9) designed by Bob Muller, are beautiful renditions of veneer inlay that anyone can enjoy making. You can learn all about this exciting woodworking craft in *The Modern Marquetry Handbook*. The *Handbook* and marquetry tools, veneers, and supplies can be found in Constantine's Woodworker's catalog (color, 116 pages, over 4,000 products, $1.00), which may be ordered by contacting Constantine's, 2050 Eastchester Road, Bronx, NY 10461 (1-800-223-8087; in NY 1-800-822-1202). To learn more about how to become a member of the Marquetry Society of America, contact: Marquetry Society of America, Box 224, Lindenhurst, NY 11757.

Dorothy Egan Publishing

If you enjoy the Flying Geese scroll saw woodwork (Project No. 10), you'll also delight in additional wood cutting and decorative painting patterns for Canada Geese bookends, trays, shelf supports, and more in master artist Dorothy Egan's new book *Take Another Gander* ($9.95 + $1.50 ph). For a book, contact: Dorothy Egan Publishing, 1343 E. 19th Street, Tulsa, OK 74120.

PNI (Porta-Nails, Inc.)

PNI has introduced new models of the Ring Master, a woodworking tool designed to cut concentric rings of wood with either an angle or a straight edge. The rings can be stacked and glued into any hollow cylindrical shape, creating beautiful vases, lamp bases, bowls, and other flat and creative pieces of your design. The Ring Master machine is safe and simple to operate, ensuring fine results for both the amateur and professional woodworker. Precision-machined of aluminum castings and extrusions and chrome-steel components, the Ring Master is offered in eight models. For more information, please contact: PNI, Box 1257, Wilmington, NC 28402 (919-762-6334).

Sterling Publishing

For more information about an outstanding selection of high-quality woodworking books offering a wide variety of subjects and projects, including such titles as *Band Saw Projects* ($9.95), *Making Wood Boxes With A Band Saw* ($9.95), *How To Build Shaker Furniture* ($11.95), *Making Small Wooden Boxes* ($9.95), and more, please contact: Sterling Publishing Company, Inc., Two Park Avenue, New York, NY 10016 (212-532-7160).

Thos. Moser Cabinetmakers

Thomas Moser, who designed our Shaker Side Stand (Project No. 1), offers a full-color catalog ($5.00) of fine furniture, including tables, desks, cabinets, chairs, chests, cupboards, bookcases, beds, headboards, and other beautiful pieces that are contemporary, distinctly American, and speak well of their New England origin. Please contact: Thos. Moser Cabinetmakers, 415 Cumberland Avenue, Portland ME 04101 (207-774-3791).

THE SAVINGS COME TO YOU AT:
WOODWORKING WORLD SHOWS
MACHINERY, TOOLS, SUPPLIES FOR EVERY WOODWORKER

THE BUFFALO SHOW
April 7 - 9, 1989
Fri. 5-9 / Sat. 10-6 / Sun. 10-5
Erie County Fairgrounds, Hamburg, NY

THE TOLEDO SHOW
April 14 - 16, 1989
Fri. 5-9 / Sat. 10-6 / Sun. 10-5
Seagate Center, Toledo, Ohio

THE BOSTON SHOW
April 28 - 30, 1989
Fri. 5-9 / Sat. 10-6 / Sun. 10-5
The Bayside Expo Center, Boston, MA

Call Toll Free M-TH
1-800-521-7623
Woodworking Association of North America
P.O. Box 706, CWC 1 Plymouth, NH 03264
(603) 536-3876

NORTHEASTERN HARDWOODS
COMPARE THE FINEST QUALITY AT THE RIGHT PRICE
TURNING STOCK
PANELING
CURLEY AND BIRDSEYE MAPLE
SPALTED LUMBER
VENEER
CARVING STOCK
RED OAK
WHITE OAK
CHERRY
HARD MAPLE
WALNUT
and other species
$2—20 page catalog
WHOLESALE PRICES
NO MINIMUM ORDER
NORTHEASTERN HARDWOODS
P.O. BOX 365, CWC 1 SALAMANCA, N.Y. 14779
716-945-1510

EDLCO
Appalachian Hardwood Specialists
21 species
Domestic Hardwoods
Softwoods
Kiln Dried Delivered Prices
Catalogue $2.00
Write Today EDLCO
Box 5373
CWC 1 Asheville, N.C. 28813
Phone (704) 255-8765
We Know Our Lumber
EDUCATIONAL LUMBER CO., INC.

Over 450 Woodworking Patterns!

Patterns are the woodworker's most important tool, and now you can own the biggest collection for scroll saws ever put into a single book—over 450 patterns, all of them imaginative and easy to copy, with complete step-by-step instructions, plus lots of handy shortcuts and money-saving tips.

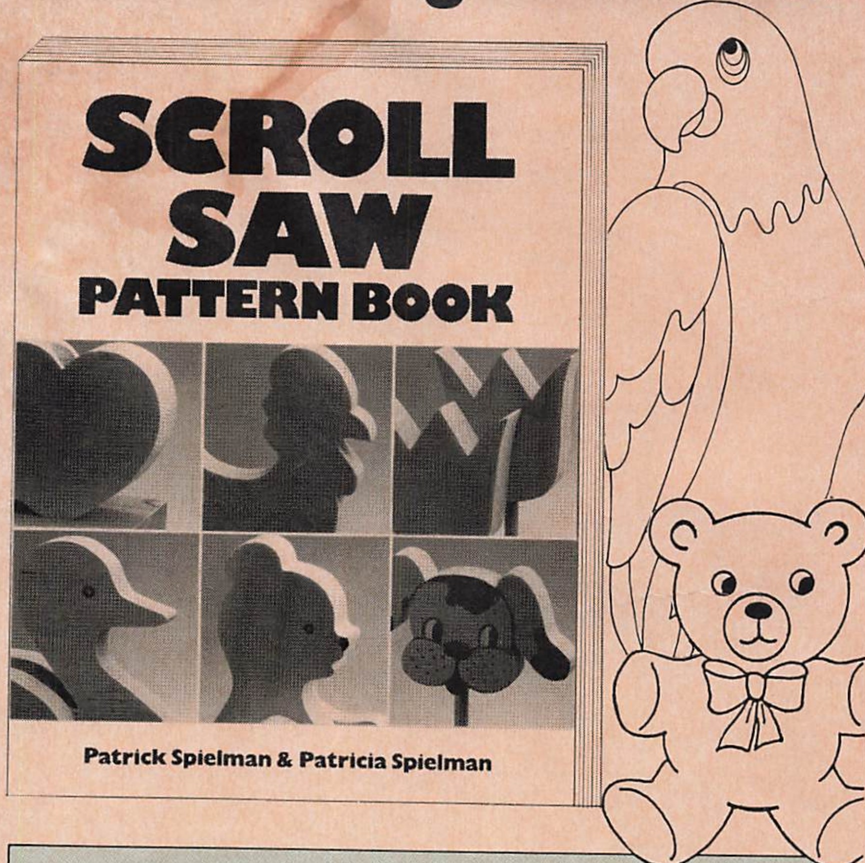
Never again pay $2.00, $3.00 or more for woodworking patterns, when you can get over 450 in this book for less than three cents each! Most of these patterns are simple enough for beginners, or for teaching kids the basics of using a scroll saw. But dozens of advanced designs will assure you the most beautiful and valuable projects you've ever made.

And if you like to challenge your skills, you'll want to try the beautiful recess, relief, marquetry, and inlay techniques.

Handy tips show you how to experiment with a whole range of paint and stain color schemes, woodburning, stencilling, and decal applications—everything you need to add your own distinctive personal touches.

You can even adapt these 450 patterns to discover literally thousands of new project possibilities, with the simple instructions for enlarging and reducing, cropping and flopping, repeating and inverting the designs.

Here's a lifetime of ideas in a book you'll pick up again and again. It's always your first stop whenever you're looking for great woodworking projects! Order your copy today!



CHOOSE FROM

Practical Gifts for the Home

- House numbers
- Refrigerator magnets
- Brackets and shelves
- Napkin rings and key racks
- Hanging lamps
- Desk signs
- Pegboards
- Salad fork and spoon
- Picture frames
- Signboards

Handmade Gifts for All Ages

- Jewelry (necklaces, pins, bracelets, key chains, name badges)
- Christmas tree ornaments
- Jigsaw puzzles
- Clowns and masks
- Pets-on-a-stick
- Humpty-Dumpty
- Gingerbread Man
- Toy animals and birds (bears, cats, dogs, deer, eagles, elephants, giraffes, horses, owls, peacocks, pelicans, pigs, rabbits, roosters, swans, tigers, turtles, whales)
- Wall designs and plaques with silhouettes

ALSO AVAILABLE

MAKING WHIRLIGIGS & OTHER WIND TOYS is a spectacular collection of action toys. There are 26 special patterns for toys that are simple, fun and quick to make. Includes a soldier, penguin, santa, unicorn, racing jockeys and much more. Along with the patterns, this instruction book tells you everything you need to know to make and enjoy this fabulous array of whirligigs and wind toys. Many are based on famous museum pieces! . . Sure to give kids and adults hours of fun—make these toys to treasure. *Order both books and save!*

General Offices: 37 11th Avenue, Huntington Station, NY 11746. © 1989 NSI.

Publishers Choice®

— GUARANTEE —

If you are dissatisfied with your purchase in any way, you may return it for a prompt and full refund. All orders are processed promptly and notification will be sent in case of delay. Shipment is guaranteed within 60 days

PUBLISHERS CHOICE, Box 4174, Dept. AV00-XA
Huntington Station, NY 11746

Please rush me:

______ # AK11 **Scroll Saw Pattern Book** $12.95
______ # AC11 **Making Whirligigs & Other Wind Toys** $9.95

Please add $2.50 postage and handling for each book, IA, IL, MI, NJ and NY residents add appropriate sales tax.

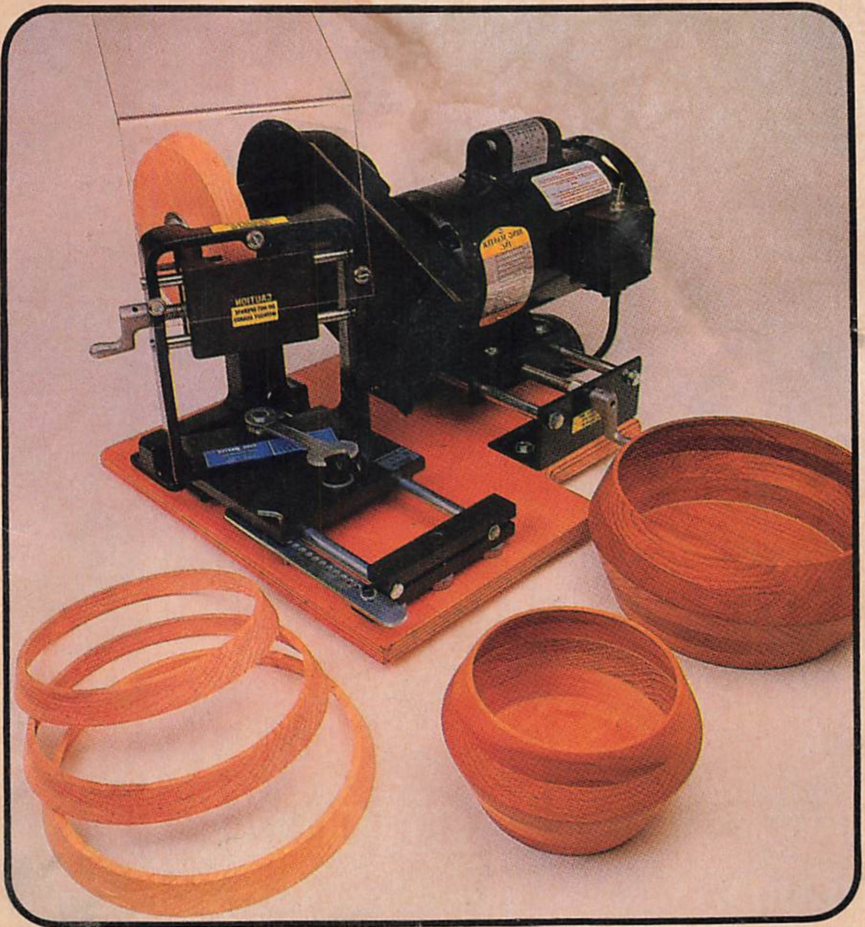
SAVE! Order both for $21.90 plus $4.90 postage & handling.

Please print: Total amount en

Name ______

Addr

RING MASTER



Test Your Imagination

Do you love the quality feel and rich look of wood? If you're a seasoned woodcrafter or ever imagined yourself as one with the capability of turning a piece of wood into a work of art, then the Ring Master turns imagination into reality. It cuts rings out of a board to produce any hollow cylindrical shape. Beautiful creations from start to finish are yours with this single, easy to operate machine.

Picture yourself creating cannister sets of oak, picture frames of bloodwood, bowls of zebra wood, or mix your favorite woods into exciting original wood creations!

- Use wood from 1/2″ to 1″ thick and up to 12″ in diameter.
- Stand alone models as well as models to fit Shopsmith and Sears lathe.
- Stand alone models also available with a variable speed drive for 600-1,000 RPM.
- Designed to be absolutely safe, even for the kids, when used according to the very simple instructions.
- Developed and built in the U.S.A. by skilled toolmakers.

See your woodworking machinery dealer or call toll free for an informative brochure.

TM

PORTA-NAILS, INC • PO Box 1257 • Wilmington, NC 28402
Phone (919) 762-6334, 1-800-634-9281

• Dowel Mate • Router Mate • Panel Template